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ABSTRACT

This annotated bibliography provides an overview of literature entered into the ERIC database in 1988 on computer use in elementary and secondary education, adult education, and special education. The first of four sections provides a list of overview documents on: computer-assisted instruction. Focusing on special applications, the second section lists documents on artificial intelligence, computer equity, computer ethics, computer literacy, copyright, counseling and guidance, interactive video, management and administration, research, software evaluation, and tests and testing. References to documents for various subject applications are listed in the third section under the headings of: English as a Second Language and Foreign Languages, Keyboarding, Logo Programming Language, Mathematics, Programming, Reading, Science, Social Studies, Vocational Education, and Writing. The fourth section contains references to documents on special populations, under the following headings: adult education, disabled learners, learning disabled, and preschool education. Each entry includes the title and author of the document, information on price and availability, the publication type, major ERIC descriptors, and an abstract. An alphabetical index of authors is provided. A copy of an ERIC digest, "The Impact of Microcomputer-Based Instruction on Teaching and Learning: A Review of Recent Research," by M. D. Roblyer, is appended. Instructions are included for ordering ERIC documents. (GL)

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COMPUTER-BASED EDUCATION

The Best of ERIC, 1988

by
Pamela McLaughlin

ERIC

1989

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The Best of ERIC 1988

by

Pamela McLaughlin

December 1989

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Computer-Based Education: The Best of ERIC June 1976-1982. Revised and Updated, by Keith A. Hall (ED 232 615). 1982.

Computer-Based Education: The Best of ERIC June 1976-August 1980, by Keith A. Hall (ED 195 288). 1980. (Incorporated in the 1982 edition.)

Computer-Assisted Instruction: The Best of ERIC 1973-May 1976, by Marian Beard (ED 125 608). 1976.

The Best of ERIC: Recent Trends in Computer-Assisted Instruction, by Richard E. Clark (ED 076 025). 1973.

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FOREWORD

As computers become commonplace in the schools, the literature about computers in education grows in leaps and bounds. This edition of *Computer Based Education: The Best of ERIC* is the eighth in the series that began in 1973. A brief review of the seven previous editions offers a short history of computers in education. Each compilation introduces new categories and drops others, and those categories reflect the nature of the current literature. This year, for example, the terms *Artificial Intelligence* and *Ethics* are among those that appear for the first time, and *Simulation* is dropped. The publication is a dynamic one, with more documents to select from than ever before. The increasing volume of the literature makes the selection process even more difficult, but probably enhances the quality of the entries.

We are pleased to have Pamela McLaughlin as the editor for this volume as she has been for the past three volumes. Consistency of selection is an important quality control factor. Ms. McLaughlin has carefully described the selection process she used in the *Introduction* to this edition.

Computing continues to dominate the literature of educational technology. The ERIC Clearinghouse on Information Resources regularly indexes 13 journals devoted exclusively to computers in education. There are a dozen more that contain computer-related articles among a broader offering of items that cover the field of educational technology. Our annual analysis of trends and issues in educational technology again shows dominance of the computer literature within the scope of the larger field.

As the Clearinghouse on Information Resources attempts to keep in the forefront of the developments, we publish synthesis monographs and digests. One useful digest published this year is *The Impact of Microcomputer-Based Instruction on Teaching and Learning: A Review of the Recent Literature.* It is appended to this volume.

We welcome your comments about this year's edition and the entire series. Let us know how we can make it even more useful for you.

Donald P. Ely
Director, ERIC/IR
Syracuse, New York
December 1989

INTRODUCTION

This publication is the third annual update in the **Computer-Based Education: The Best of ERIC** series. Other volumes in this irregularly-published series are listed on the back of the title page.

This series has been designed for use by educators who need to make decisions about the use of microcomputers in the schools, or who want to keep abreast of new developments in the field. This update provides an overview of the literature entered into the ERIC database in 1988 on computer use in elementary and secondary education, adult education, and special education. It should be noted that 1988 is the date when these materials were entered in the ERIC files, and that the actual publication date may well be a year or more earlier.

Higher Education Excluded. Applications of computer-based education in institutions of higher learning differ in many ways from applications in elementary and secondary schools. These differences include the availability of hardware, level of software,and other issues related to the growth and development of computing and management of computing resources in higher education. This area is sufficiently distinct to warrant separate treatment.

Scope of the Bibliography

Substantive ERIC documents from the 1988 volumes of **Resources in Education** (RIE) have been selected for inclusion in this publication; journal articles have not been included due to their availability in other bibliographic sources. For each topic covered, selected ERIC document citations are listed. Types of materials targeted for selection include:

- Handbooks;
- Literature reviews;
- Teacher's guides;
- Administrator guides;
- Program descriptions;
- Bibliographies;
- Research reports;
- Conference proceedings; and
- Evaluative reports.

Because of the size of the literature base, emphasis has been placed on documents that focus broadly on the topic of computer-based education, and provide information to aid in the decision making process. To this end, short documents (less than 8 pages), opinion papers, and descriptions of individual programs have generally not been included.

Search Strategy

A computer search of the ERIC database on DIALOG was conducted for the year 1988, using the following major terms: *Computer Assisted Instruction; Computer Assisted Testing; Computer Managed Instruction; Computer Oriented Programs; Computer Uses in Education; Computer Literacy; Computer Simulation; Computer Software; Courseware*; and *Microcomputers*. This search resulted in 538 items, of which 242 were selected for inclusion. Most of the documents are representative of the above criteria.

New Categories

New categories in this update include *Artificial Intelligence*, *Ethics*, *Keyboarding*, and *Learning Disabled*. Concerned with the use of computer systems to perform functions usually associated with human intelligence, *Artificial Intelligence* encompasses work on "intelligent" tutors for computer assisted instruction systems. Entries dealing with *Ethics* address issues involved in using computers in educational settings as well as topics that should be covered in teaching computer ethics. *Keyboarding*, or data entry via a keyboard similar to a typewriter keyboard with the addition of function keys, is of particular interest to teachers whose students are learning to use word processing programs. In previous volumes, entries on the *Learning Disabled*, which refers to students who experience difficulty in mastering particular subjects or skills, were included with materials on *Disabled Learners*, who have physical or mental handicaps that require special learning facilities; the number of documents this year required that a new category be created. Again, conference proceedings are listed in the appropriate chapter for the theme of the conference, rather than in a separate category for conference proceedings. The category of *Computer Equity* includes materials dealing with minority groups and gender differences. Categories that were not reflected in the retrieval for this update include *Simulation*, *Agricultural Education*, *Business Education*, *Language Arts*, and *Distance Education*. It should be noted that materials in other categories may address some of these topics. For example, curriculum guides for a bilingual microcomputer skills course are included in the section on *Adult Education*.

Organization of the Bibliography

This bibliography is divided into four major sections. The first contains 24 documents that provide a general discussion of computer assisted instruction, including resources and guidelines for the implementation of CAI programs in the schools, reports of surveys of instructional computing, a collection of essays, a directory of technology programs, and proceedings of five conferences.

Focusing on special applications of computer-based education, i.e., those without a specific subject orientation, the second section contains two papers on artificial intelligence; five reports on computer literacy, including two conference papers, two curriculum guides, and one research report; two documents on copyright issues; six papers on computer equity; three reports on counseling and guidance; two papers on ethics; 11 reports on interactive video, including an ERIC Digest, three conference papers, two research reports, a teaching guide, and the proceedings of one conference; 14 documents on management and administration issues, including three administrator guides, five conference papers, two research reports, and one practicum paper; 10 research reports, including the proceedings of two conferences; 11 documents on software evaluation, including six collections of evaluations, one handbook, one research report, one evaluator's guide, and one annotated bibliography; and nine reports on testing, including seven conference papers, one ERIC Digest, and two evaluative reports.

The third section covers computer applications in various subject areas, including four items on English as a second language and foreign language instruction; two documents on keyboarding; six papers on Logo; 22 documents on mathematics, including 10 teaching guides, five technical reports, two sets of software evaluations, two research reports, and one conference paper; six reports on reading; three papers on programming; 14 documents on science, including four program descriptions, one conference paper, six technical reports, and two teaching guides; four papers on social studies; 18 documents on vocational education, including nine teaching guides, three product reviews, two literature reviews, one research report, one conference paper, and one conference proceedings; and 10 documents on writing, including five conference papers, one evaluative report, one literature review, one research report, one teaching guide, and one ERIC Digest.

The final section addresses special populations and includes 13 documents on computer applications for adult education; 25 reports on persons with disabilities, including four conference proceedings, eight conference papers, three collections of software evaluations, five program descriptions, one teaching guide, one ERIC Digest, one directory, and one handbook; six papers on learning disabilities; and six documents dealing with preschool aged children.

Within each section, documents are listed alphabetically by personal author, editor, or corporate author. If no author is available, items are alphabetized by title.

There is some overlap between the sections in the subject matter covered, e.g., one document in the disabilities section deals with the teaching of arithmetic. There is also potential overlap between the science and mathematics categories and the reading and writing categories. An attempt has been made to list documents in the most appropriate category; individual items have not been listed in more than one category. Users will want to check all related sections for information on a given topic.

COMPUTER ASSISTED INSTRUCTION

Overview Documents

ED287469
A Guide to Curriculum Planning in Computer Education.
Anderson, M. Elaine
Wisconsin State Dept. of Public Instruction, Madison.
1987, 122p.
Available from: Publications Sales Office, Wisconsin Department of Public Instruction, 125 South Webster Street, P.O. Box 7841, Madison, WI 53707-7841.
EDRS Price - MF01/PC05 plus postage.
Document Type: Teaching Guide (052)
Major Descriptors: *Computer Assisted Instruction; *Computer Literacy; *Computer Science Education; *Curriculum Development

Designed to help Wisconsin educators use computers effectively in the instructional environment, this guide emphasizes planning at the district and building levels for the integration of computer literacy competencies into various disciplines in the K-12 curriculum and the teaching of computer science as an elective at the secondary level. The manual is divided into eight major sections: (1) Perspectives (background and premise of the guide); (2) Model for Using Computers in Education (computers in both instruction and administration); (3) District Plan (planning process, philosophy and rationale, curriculum integration, facilities/resources, and budget considerations); (4) Implementing the District Program (staff development and software/hardware selection, acquisition, and management); (5) Evaluating the District Program (overview and evaluation checklist); (6) Modifying the District Plan and Program (overview, planning for change, analyzing/interpreting program evaluations, setting priorities, implementing change, and evaluating impact); (7) Computer Science (overview, definition, goals, scope and sequence); and (8) Resources (overview, curriculum planning, inservice resources, software evaluation resources, computer-related journals, computer software and instructional television packages, audiovisual materials, computer science, keyboarding, and computer equity). Five appendixes provide a summary of equity issues, a discussion of factors to be considered in teaching keyboarding, a hardware evaluation worksheet, program modification worksheets, and school district standards from the Wisconsin Statutes that affect computers in education.

ED287458
The Impact of Computer Use on Children's Learning: What Research Has Shown and What It Has Not.
Becker, Henry Jay
23 Apr 1987, 88p. Paper presented at the Annual Meeting of the American Educational Research Association (Washington, DC, April 20-24, 1987).
EDRS Price - MF01/PC04 plus postage.
Document Type: Review Literature (070); Research Report (143); Conference Paper (150)
Major Descriptors: *Computer Assisted Instruction; *Instructional Effectiveness; *Meta Analysis; *Research Design; *Research Needs; *Research Problems

This examination of the research on computer-based instruction for the major academic subjects in the elementary and secondary grades considers three varieties of empirical data—surveys of computer-using teachers, school district program evaluations, and experimental field studies. A discussion of the findings of two national surveys of computer-using educators conducted in 1983 and 1985 is followed by a review of research on the effectiveness of computer-assisted instruction. The methodologies used and the major conclusions reached by reviews and meta-analyses of research conducted since the mid-1960s are then discussed, followed by a review of more recent studies of the impact of computer-based approaches on children's learning. A best-evidence synthesis approach is used to provide an overview of the type of research being done and individual studies are discussed in two categories—those using randomized assignment of classes to treatment groups, and those using comparison groups but without randomized assignment. The implications of these studies for further research in this area are then considered, and a model for field experiments is proposed. The results of the 1985 national survey of computer-using educators are presented in 28 figures and tables, including a capsule summary.

ED290447
Microcomputers and the Classroom Teacher. Fastback 261.
Caissy, Gail A.
Phi Delta Kappa Educational Foundation, Bloomington, Ind.

1987, 41p. This publication was sponsored by the University of Nebraska/Lincoln Chapter of Phi Delta Kappa.
Report No.: ISBN-0-87367-261-5
Available from: Phi Delta Kappa, Eighth and Union, Box 789, Bloomington, IN 47402 ($0.90).
EDRS Price - MF01/PC02 plus postage.
Document Type: Teaching Guide (052); Project Description (141)
Major Descriptors: *Classroom Techniques; *Computer Assisted Instruction; *Computer Software; *Curriculum Development; *Microcomputers

This monograph for teachers addresses two emerging areas in the computing field—providing inservice training in microcomputer use for the general teaching population, and integrating the use of microcomputers into the overall curriculum. A brief discussion of why computers should be used in the classroom introduces five chapters which provide overviews of the following topics: (1) the use of computers in teaching and learning (areas of computer use and using the computer as a teaching/learning tool); (2) types of software available for schools (computer-assisted instruction software, applications software, and databases); (3) integrating computers into the classroom; (4) developing a plan for using computers in the classroom (setting up a classroom computer center and working with only one computer in the classroom); and (5) evaluating educational software (general questions, questions about instructional design, and questions about physical characteristics of the program). A concluding statement argues that the key to continued growth and expansion in the educational computing field lies with classroom teachers and urges them to take an interest in computers and begin to use this important new tool in their classrooms. A 71-item reference list concludes the document.

ED291366
Computer Education: Getting Started.
Davies, Anne
Sep 1985, 136p.
Sponsoring Agency: Northwest Territories Dept. of Education, Yellowknife.
EDRS Price - MF01/PC06 plus postage.
Document Type: Teaching Guide (052)
Major Descriptors: *Computer Assisted Instruction; *Computer Literacy; *Computer Software; *Microcomputers

Designed to assist teachers who are not familiar with computer applications in elementary education, this guide provides information on personal skill development, computer terminology, software organization and evaluation, and troubleshooting. A tentative set of computer education objectives is outlined, and examples and strategies for effective classroom use are provided. Various programs and applications are detailed, including computer-assisted learning, simulation programs, problem solving and flowcharting, LOGO, word processing, keyboarding, database management, telecommunications and electronic mail, and electronic spreadhseets. The text includes one article reprinted from **The Computing Teacher** and is supplemented by worksheets for student use, charts, diagrams, and illustrations. Lists of eight recommended magazines and journals, 32 recommended software programs, and 14 recommended books are also provided.

ED288497
Computers in the School Curriculum (A Collection of Essays).
Ediger, Marlow
[1987], 49p.
EDRS Price - MF01/PC02 plus postage.
Document Type: Position Paper (120); Collection (020)
Major Descriptors: *Computer Assisted Instruction; *Courseware; *Curriculum Development; *Social Studies

Emphasizing the use of computers to achieve educational objectives, the three essays in this collection utilize the principles of learning, schools of thought in educational psychology, and guidance from a study of the philosophy of education to provide a framework relevant for the use of computers in developing the curriculum. The first essay, "Goals in the Curriculum," assesses the worth of diverse categories of relevant ends in the curriculum, with emphasis on vocational and classical ends and pupil interest as ends. "Computers at the Crossroads" discusses reasons why many classroom teachers do not use available computer technology, the evaluation of software, the philosophy of computer use, the psychology of learning and computer use, and the survival of computer and software use in the classroom. "Computer Use and the Social Studies" discusses the principles of learning and the computer; five kinds of courseware—drill and practice, tutorials, diagnosis and remediation, simulations, and games—and their use in social studies classes; various philosophies of education and the computer, including experimentalism, idealism, realism, and existentialism; and two psychologies of learning, i.e., behaviorism and humanism, and the computer. Eight references are provided for the second essay.

ED296721

Teacher Attitudes toward Computer Use in the Classroom.

Hannaford, Marion E.

Mar 1988, 16p. Paper presented at the Annual Meeting of the Pacific Northwest Research and Evaluation Conference of the Washington Educational Research Association (Seattle, WA, March 24-25, 1988).

EDRS Price - MF01/PC01 plus postage.

Document Type: Research Report (143); Test, Questionnaire (160); Conference Paper (150)

Major Descriptors: *Computer Assisted Instruction; *Teacher Attitudes

This study of factors that block computer implementation in classrooms tested four hypotheses about the attitudes of preservice and inservice teachers toward scheduling arrangements and instructional use of computers in their classrooms. A semantic differential survey instrument was used to measure the attitudes of 36 Washington State University graduate students, who were surveyed as a sample of inservice teachers, and 37 undergraduate students, who served as a preservice sample. Demographic factors examined included years of teaching experience, previous involvement with computers, and whether the teachers were (or intended to be) subject specialists or classroom teachers. Analyses of the data indicated that both inservice and preservice teachers have positive attitudes toward the computer as a classroom tool and toward the logistics of classroom use of computers. In both cases, however, the attitudes of preservice teachers were found to be more positive than those of inservice teachers. The data provided support for three of the four hypotheses. A copy of the questionnaire is appended. (8 references)

ED295604

Issues in Training Teachers To Use Microcomputers in the Classroom: Examples from the United States. Policy Paper No. 84-C2.

Hess, Robert D.; Miura, Irene T.

Stanford Univ., Calif. School of Education.

Feb 1984, 72p.

Sponsoring Agency: Organisation for Economic Cooperation and Development, Paris (France).

EDRS Price - MF01/PC03 plus postage.

Document Type: Review Literature (070); Project Description (141) Major Descriptors: *Computer Uses in Education; *Microcomputers; *Teacher Education

This overview of the role of microcomputers in public education covers the following topics: (1) the growth of microcomputers in schools; (2) the role of professional organizations and federal and state government agencies; (3) patterns of use in the schools, including instruction in computer science, instruction in traditional subject areas, and productivity skills; (4) implementation issues such as location, scheduling, access, integration into the curriculum, multi-use applications,and diversity in student and teacher experience; (5) impact on faculty roles and functions; (6) teacher training; and (7) software design, production, and evaluation. Two examples of approaches to computer use and a summary conclude the report. (30 references).

ED291515

Early Childhood Classrooms and Computers: Programs with Promise.

Hoot, James L.; Kimler, Michele

ERIC Clearinghouse on Elementary and Early Childhood Education, Urbana, Ill.

1987, 3p.

Sponsoring Agency: Office of Educational Research and Improvement (ED), Washington, DC.

EDRS Price - MF01/PC01 plus postage.

Document Type: ERIC Product (071); Non-Classroom Material (055); ERIC Digests (Selected) (073)

Major Descriptors: *Computer Assisted Instruction; *Computer Uses in Education; *Programing Languages; *Teacher Role; *Word Processing

Word processing and the LOGO programing language are two microcomputer applications that are beginning to show benefits as learning tools in elementary school classrooms. Word processing packages are especially useful with beginning writers, whose lack of motor coordination often slows down their acquisition of competence in written communication. Software developed for beginning writers can: (1) provide learners with visual, motor, and even auditory support; (2) encourage learners to write more by minimizing mechanical drudgery; (3) encourage writers to focus on content rather than form; (4) increase the likelihood of revision; (5) provide learners with letter-quality output, which encourages sharing of writing; (6) promote social interaction, by making writing visible to passersby; (7) make writing appealing for special needs children; and (8) encourage positive attitudes toward learning. Researchers believe that while the graphics-oriented programing language LOGO does not teach the planning skills necessary for programing, it can help young learners by: developing problem-solving abilities; facilitating learning of mathematical concepts; and encouraging collaboration, social development, creativity, spatial relation development, and overall cognitive development—especially in special needs children. Teachers who understand both the power and limitations of these programs for children make the most effective use of both LOGO and word processing software.

ED292654

User Friendly Research: An Interactive Computer Software System Combining Teaching, Learning, Curriculum and Research.

Koch, Helmut; And Others

1988, 20p. Paper presented at the Annual Meeting of the National Association for Research in Science Teaching (61st, Lake of the Ozarks, MO, April 10-13, 1988).

EDRS Price - MF01/PC01 plus postage.

Document Type: Research Report (143); Project Description (141); Conference Paper (150)

Major Descriptors: *Courseware; *Earth Science; *School Business Relationship; *Science Curriculum; *Science Instruction; *Secondary School Science

This paper describes a joint research project between science educators and computer science software engineers. A computer software system based on cognitive learning theory was designed that was intended to be relevant to teaching, learning, curriculum development, and research in science education. The generic prototype software system was designed to serve three purposes: (1) to aid instructors and students of science in the construction of a meaningful knowledge base in a science discipline by means of concept mapping; (2) to serve as an intelligent, individualized, and interactive tutor for learning the concepts and conceptual relationships in a specified knowledge domain; and (3) to generate a database for subsequent analysis of, and research on, student misconceptions and how these might change through computer-based instruction. The database generated by the software program was designed to be used to guide subsequent construction, modification, or improvement of curricula.

ED296705

Computer Use in the United States: 1984.

Kominski, Robert

Bureau of the Census (DOC), Suitland, Md. Population Div. **Current Population Reports, Series P-23,n155** Mar 1988, 44p.

Available from: Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

EDRS Price - MF01/PC02 plus postage.

Document Type: Statistical Material (110); Project Description (141); Test, Questionnaire (160)

Major Descriptors: *Computer Literacy; *Computers; *Family (Sociological Unit); *Individual Characteristics; *Socioeconomic Influences; *Use Studies

This report provides statistical information on computer use in the United States in 1984, including home, work, and school use, and use according to socioeconomic status, race, and sex. The data show that over 15 million American adults owned home computers, but only 53% actually use them. About 8% of U.S. households, or 6.98 million, had a computer in 1984, and households with school age children were three times more likely to have a computer. Students aged 10 to 13 were the most likely to use a computer at school. Among adults, 63% of the men and 43% of the women used the computer if it was present in the house. Households with incomes of $50,000 or more were the most likely to own a computer (23%), while households with incomes of $10,000 or less were the least likely (2%). Although blacks were less likely to have home computers, black children who did have them used them more than white children. Survey data are presented in three text tables and five detailed tables. Appendixes provide additional tables and information on the survey itself, including its reliability and the survey instrument.

ED290444

Information Technologies and Basic Learning. Reading, Writing, Science and Mathematics.

Lesgold, Alan M., Ed.

Organisation for Economic Cooperation and Development, Paris (France). Centre for Educational Research and Innovation.

1987, 270p. For the final report of Phase I of this project, see ED 271 056.

Available from: OECD Publications and Information Centre, 2001 L Street, N.W., Suite 700, Washington, DC 20036-4095 ($32.00).

EDRS Price - MF01 plus postage. PC not available from EDRS.

Document Type: Conference Proceedings (021); Evaluative Report (142)

Major Descriptors: *Basic Skills; *Computer Assisted Instruction; *Computer Software; *Information Technology; *Instructional Improvement

This volume marks the completion of Phase II of the Centre for Educational Research and Innovation (CERI) project of inquiry into the issues inherent in the introduction of new information technologies in education. It summarizes the issues discussed and the recommendations made by four working groups at an international conference, each of which focused on the effects of new information technologies on instruction in one of the four basic skills, i.e., reading, writing, science, and mathematics. Members of these groups included representatives of Australia, Canada, Japan, and the United States as well as various western European nations. Noting the increased pressure on governments to provide better basic skills education, it is suggested that two emerging forces can help to provide a sound basis for the introduction of new technologies into education—inexpensive information processing power, especially computers; and the growing field of cognitive science that can rigorously study, understand, and improve the educational process. Each of the four basic skills is examined in the context of: (1) current instruction; (2) existing information technologies; (3) promising areas of research and prototype development; and (4) the implications of the new technologies. It is recommended that OECD (Organization for Economic Cooperation and Development) member nations encourage course demonstration and development; reexamine the basic skills curriculum in light of changes brought about by new information technologies; cooperate with other countries to develop software that is both effective and affordable; and encourage research in the cognitive and instructional sciences. The text is supplemented with various figures, a bibliography is provided at the end of each of the four major sections, and a glossary is included.

ED286487
Open Portal Schools: The Real Impact of Computer-Based Education.
Loop, Liza
1987, 14p. Paper presented at the Annual Meeting of the American Educational Research Association (Washington, DC, April 20-24, 1987).
EDRS Price - MF01/PC01 plus postage.
Document Type: Position Paper (120); Conference Paper (150)
Major Descriptors: *Computer Assisted Instruction; *Educational Trends; *Futures (of Society); *Teleconferencing

The model for the school of the future that is suggested in this paper is based on the imaginative application of computer and information technologies. Four major functions are identified for this imaginary school: (1) administration—academic recordkeeping for all citizens; (2) the Open Portal Local Node—teleconference-based classes available at home and at other facilities throughout the community; (3) face-to-face curriculum—studios, stages, workshops, laboratories, gardens, and gyms; and (4) traditional classrooms. The changing role of the teacher is discussed, and supporting social institutions such as enhanced childcare facilities and home-based employment are described.

ED295616
The Computer as a Teaching Tool: Promising Practices. Conference Report (Cambridge, Massachusetts, July 12-13, 1984). CR85-10.
McDonald, Joseph P.; And Others
Educational Technology Center, Cambridge, MA.
Apr 1985, 25p. For a report of a related conference, see ED 295 619.
EDRS Price - MF01/PC01 plus postage.
Document Type: Conference Proceedings (021); Project Description (141)
Major Descriptors: *Computer Assisted Instruction; *Computer Literacy; *Language Arts; *Mathematics Instruction; *Science Instruction

This report of a 1984 conference on the computer as a teaching tool provides summaries of presentations on the role of the computer in the teaching of science, mathematics, computer literacy, and language arts. Analyses of themes emerging from the conference are then presented under four headings: (1) The Computer and the Curriculum (the computer keeps learning connected to experience; the computer provides access to the underlying disciplines of subjects; the computer challenges the curricular status quo; and the computer aids implementation of the curriculum); (2) The Computer and Reality (computer-based models and simulations only imperfectly represent reality; a program may mask operations that students should experience to give depth and stability to their learning; and computers sometimes need to be used in conjunction with other, more concrete, experiences); (3) Perspectives on Teaching Practice (teaching is rooted in a teacher's own interests, need to understand, and social commitment; and teaching is, to a significant extent, a product of circumstance, not an entirely rational enterprise); and (4) Teachers' Professional Development (strategies and goals are needed for teacher training). The report concludes with a list of questions for further research. (11 references)

ED292460
Computers in Classrooms: A Quasi-Experiment in Guided Change. Final Report.
Mehan, Hugh; And Others
California Univ., San Diego.
26 Jun 1985, 299p.
Sponsoring Agency: National Inst. of Education (ED), Washington, DC.
EDRS Price - MF01/PC12 plus postage.
Document Type: Project Description (141); Research Report (143); Test, Questionnaire (160)
Major Descriptors: *Computer Assisted Instruction; *Computer Literacy; *Curriculum Development; *Equal Education; *Microcomputers

This report describes a curriculum development program designed to address three problems associated with computer use in the schools: underutilization of the computer capabilities by overemphasis on basic skills instruction; stratified access to computers, or inequitable access based on race, sex, or income; and emphasis on teaching computer programming when the skills needed for the workplace are much more diverse. This project involved the systematic introduction of computer curricula in language arts and mathematics to students in grades 2-6. One classroom was part of a designated bilingual program, two others had a number of students who spoke Spanish as a first language, and one was designated as a Chapter 1 classroom. The report is presented in nine chapters: (1) "Introduction" (Hugh Mehan); (2) "The Classrooms" (Marcia Boruta, Ann Marie Newcombe, Marti tum Suden, and Christina Drale); (3) "Microcomputers and Classroom Organization: Some Mutual Influences" (Hugh Mehan); (4) "Some Cognitive and Social Benefits of Peer Interaction on Computers" (Hugh Mehan, Nick Maroules, and Christina Drale); (5) "A Holistic Approach to Computer Literacy" (Hugh Mehan, Margaret M. Riel, Marcia Boruta, Christina Drale, Nick Maroules, and Kim Whooley); (6) "Functional Learning Environments for Writing" (Margaret M. Riel); (7) "Computer Activities in a Bilingual Setting" (Luis C. Moll and Ann Marie Newcombe); (8) "Teaching Problem Solving Strategies" (Marti tum Suden and Robert Rowe); and (9) "Summary and Conclusions" (Hugh Mehan, Luis Moll, and Margaret M. Riel). The text is supplemented by 25 tables, 151 figures, and 103 references. Two appendices contain guidelines for selecting prompts and rubrics for use in teaching writing and a functional computer literacy test.

ED295614
Essential Goals and Objectives for Computer Education.
Michigan State Board of Education, Lansing.
1987, 38p.
EDRS Price - MF01/PC02 plus postage.
Document Type: Non-Classroom Material (055)
Major Descriptors: *Computer Literacy; *Computer Science Education; *Educational Objectives; *Educational Planning

Developed by the Michigan State Board of Education, this document begins with brief discussions of a philosophy for the integration of computers into all content areas and district planning for computer use in schools. Essential goals and objectives for computer education are then outlined in the following areas: (1) computing and its evolving role in a technological society, including the historical development of the computer, the role and impact of computers in society, ethical and social issues raised by increased use of computers, and future trends; (2) computing fundamentals, including understanding of the basic operations, terminology, and parts of computer systems as well as the ability to independently operate a system; (3) computer applications, including familiarity with word processing, database management, spreadsheets, graphics, communications, and programming; and (4) computer-enhanced problem solving. A resource for district planning and a list of educational computer resources are appended.

ED290436
The Role of the Computer in Education. Proceedings of the Annual Meeting (7th, Arlington Heights, Illinois, February 18-20, 1987).
Micro-Ideas, Glenview, IL.
Feb 1987, 273p. For the proceedings of the sixth conference, see ED 290 435.
EDRS Price - MF01/PC11 plus postage.
Document Type: Conference Proceedings (021); Project Description (141)
Major Descriptors: *Computer Assisted Instruction; *Computer Literacy; *Computer Software; *Microcomputers

The 47 papers in these proceedings describe computer technology and its many applications to the educational process. Topics discussed include computer literacy, networking, word processing, automated instructional management, computer conferencing, career information services, computer-aided drawing/design, and robotics. Programming languages such as Show and Tell and Logo are also reviewed. Additional papers discuss the use of computers to teach music, science, mathematics, reading, language arts, and physical education to normal, gifted, and handicapped students. Other educational applications included are micro-based library management, laser videodisc and computer based instruction, the creation of a successful computer program in the school, developing problem-solving skills through programming, using a microcomputer to collect eye movement data, and computer contests.

ED290435
The Role of the Computer in Education. Proceedings of the Annual Meeting (6th, Arlington Heights, Illinois, February 12-14, 1986).
Micro-Ideas, Glenview, IL.
Feb 1986, 300p. For the proceedings of the seventh meeting, see ED 290 436.
EDRS Price - MF01/PC12 plus postage.
Document Type: Conference Proceedings (021); Project Description (141)

Major Descriptors: *Computer Assisted Instruction; *Computer Literacy; *Computer Managed Instruction; *Computer Software; *Microcomputers; *Word Processing

Fifty-five papers focusing on the role of computer technology in education at all levels are included in the proceedings of this conference, which was designed to model effective and appropriate uses of the computer as an extension of the teacher-based instructional system. The use of the computer as a tool was emphasized, and the word processor was the tool of interest for this year's meeting. Microcomputers and their applications in teaching mathematics, science, music, drafting, writing skills, graphic arts, and physical education are discussed, as well as such topics as library resource sharing, tessellations, robotics, word processing, networking, keyboarding, and the electronic spreadsheet. Additional papers describe the use of microcomputers to evaluate tests, computer use in education in the USSR, the production of a school newspaper with microcomputers, utilization of demographic data, library classification and cataloging updates of computer related terms, artificial intelligence in education, direct satellite television programming, and computerizing the discipline and attendance offices. A list of figures and a subject/author index are provided.

ED294297

The Effectiveness of Computer-Assisted Instruction, Cooperative Learning, Peer Tutoring, and Class Size on Academic Achievement: A Review.

Moersch, Christopher M.

Jul 1987, 14p. Paper presented at the Instructional Leadership Institute (San Diego, CA, July 1987).

EDRS Price - MF01/PC01 plus postage.

Document Type: Project Description (141); Review Literature (070); Conference Paper (150)

Major Descriptors: *Academic Achievement; *Class Size; *Computer Assisted Instruction; *Cooperative Education; *Peer Teaching; *Resource Allocation

Since the publication of "A Nation at Risk," curriculum leaders have been under increased pressure to make more prudent, informed decisions about allocating district resources that will directly or indirectly lead to increased student achievement. The decision-making process should include a thorough investigation of the best and most cost-effective methodologies, strategies, and programs to achieve the desired outcomes. This paper summarizes the results of a study to provide Grossmont Union High School District (San Diego County, California) with a basis for comparing the effects of computer-assisted learning, cooperative learning, peer tutoring, and class size on academic achievement. A literature review yielded encouraging evidence concerning the effectiveness of cooperative learning and peer tutoring for increased academic achievement. Cooperative learning, employing the group study approach and group rewards for individual learning, produced higher achievement gains than conventional instruction. Numerous research studies support computer-based instruction as a viable supplementary medium for increasing student achievement, although additional research into microcomputer applications is needed. Class size had the least empirical support as a viable strategy for increasing student achievement. Excluded from this study were per capita student costs, physical space requirements, and scheduling considerations—important factors when allocating district funds to support a particular program. Included is a bibliography of 42 references.

ED292799

Through the Looking Glass: Towards Thicker Description of Teaching.

Olson, John K.

Apr 1988, 27p. Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April 5-9, 1988).

EDRS Price - MF01/PC02 plus postage.

Document Type: Conference Paper (150); Project Description (141) Major Descriptors: *Behavior Patterns; *Classroom Environment; *Computer Assisted Instruction; *Teacher Attitudes; *Teacher Student Relationship

A "thick" description of teaching is referred to as the uncovering of the meaning of what is being said or done by knowing the structure in which it is said or done. In this ethnographic study of teachers' experiences with microcomputers in their classrooms, George Kelly's (1955) personal construct theory was used to develop a clinical interview strategy based on the idea that how teachers deal with a change is dependent on how they construe classroom life. It is posited that teachers have well established practices for conducting life in their classrooms which allow the business of the class to be done. Computer-based learning threatens those routines and causes routines to be re-appraised. How teachers use computers and how they construe their experience cannot be properly understood without knowing the backdrop of everyday classroom routines and what they say about how a teacher interacts with the students in the context of the classroom. Using Kelly's method, two teachers were asked to construe classroom events involving computers and some insight was gained into the way they thought about their experiences with microcomputers. One teacher, at the elementary level, was just beginning to imagine how computers would work in the classroom. The other, at the secondary level, was already giving over some of the work of the curriculum to the computer. A report is presented of observations of the teachers' classrooms and of in-depth interviews with the teachers.

ED291359

Extending the Human Mind: Computers in Education. Proceedings of the Annual Summer Conference (5th, Eugene, Oregon, July 31 and August 1, 1986).

Oregon Univ., Eugene. Center for Advanced Technology in Education.

1986, 182p. For the 1985 and 1987 proceedings, see ED 265 831 and ED 290 433. Some pages contain small, light type.

Available from: Proceedings, Center for Advanced Technology in Education, 1787 Agate Street, University of Oregon, Eugene, OR 97403 ($15.00 prepaid).

EDRS Price - MF01/PC08 plus postage.

Document Type: Conference Proceedings (021); Position Paper (120); Project Description (141)

Major Descriptors: *Computer Assisted Instruction; *Computer Literacy; *Curriculum Enrichment; *Instructional Effectiveness; *Learning Resources Centers; *Microcomputers

The 24 papers in these proceedings describe computer technology and its many applications to the educational process. Topics discussed include computer systems in the classroom of the future; how to evaluate a school's computer program; computer use in special education; computer science and the liberal arts; keyboarding issues; making the computer speak the child's language; going online; useful public domain software for educators; advance techniques used in function graphing; impact of optical storage technology on education; print shop applications in the classroom; creating school documents with PageMaker; new databases in the secondary content areas; the CI4 inservice model; the Apple classroom of tomorrow; the future of computers in instruction; computer integrated schooling; new directions for teaching basic programming; ideal uses of the computer in science; the role of school-based computer coordinators as change agents in elementary school programs; robots in elementary classrooms; teachers use of Superpilot to write software; and critical issues in the teaching of writing with a word processor.

ED286467

Meeting the Challenge: Computers and Higher Order Thinking. A Research Agenda. Program Report 86-15. Report of a Research Conference Held at the National Academy of Sciences (Washington, DC, October 31-November 1, 1985).

Patterson, Janice H.; Smith, Marshall S.

Wisconsin Center for Education Research, Madison.

Dec 1986, 27p.

Sponsoring Agency: Office of Educational Research and Improvement (ED), Washington, DC.

EDRS Price - MF01/PC02 plus postage.

Document Type: Conference Proceedings (021); Review Literature (070); Project Description (141)

Major Descriptors: *Cognitive Development; *Cognitive Processes; *Computer Assisted Instruction; *Research Needs

This report presents a national agenda for research on the learning of thinking skills via computer technology which was developed at a National Academy of Sciences conference on educational, methodological, and practical issues involved in the use of computers to promote complex thought in grades K-12. The discussion of research topics agreed upon by conference participants is summarized under four subgoals: (1) research on higher order thinking; (2) research and evaluation of school efforts to teach higher order thinking; (3) research, development, and evaluation of ways in which computers can be used to teach higher order thinking, including the interactive and motivational capabilities of computers; and (4) research on ways in which schools can use computers. Current research in each area is reviewed, and the need for further investigation is articulated. Eight papers presented at the conference are listed in the preface, and a 50-item references is provided.

ED292622

Mirrors of Minds: Patterns of Experience in Educational Computing.

Pea, Roy D., Ed.; Sheingold, Karen, Ed.

1987, 342p. Compilation of papers from the Center for Children and Technology, Bank Street College. Some charts may not reproduce well.

Report No.: ISBN-089391-423-1

Available from: Ablex Publishing Corporation, 355 Chestnut Street, Norwood, NJ 07648 ($19.95).

EDRS Price - MF01 plus postage. PC not available from EDRS.

Document Type: Collection (020); Research Report (143)

Major Descriptors: *Computer Uses in Education; *Educational Technology; *Elementary School Mathematics; *Elementary School Science; *Secondary School Mathematics; *Secondary School Science

This publication presents selected papers that address certain questions that are being investigated by Bank Street College's Center for Children and Technology (CCT). CCT's researchers are working to help define new research inquiries and to document students' and teachers' uses and understandings of educational technologies. Included in this book are papers dealing with: (1) the interpretation of Logo in practice; (2) teachers' adoption of multimedia technologies for science and mathematics instruction; (3) functional environments for microcomputers in education; (4) preparing urban teachers for the technological future; (5) literacy and technology for minority schools; (6) mapping the cognitive demands of learning to program; (7) integrating human and computer intelligence; (8) the cognitive effects of learning computer programming; (9) Logo and the development of thinking skills; (10) the microcomputer as a symbolic medium; (11) involving teachers in the formative research and design of "The Voyage of the Mimi"; (12) interactive video discs for children's learning; (13) computers and girls; (14) informing the design of software through context-based research; and (15) the practices of novices and experts in critical inquiry.

ED295677

Power On! New Tools for Teaching and Learning.

Congress of the U.S., Washington, D.C. Office of Technology Assessment.

Sep 1988, 263p. A summary of the study, which also appears as the first chapter of this report, is also available as a separately bound publication: **Power On! New Tools for Teaching and Learning, Summary.** (OTA-SET-380).

Report No.: OTA-SET-379

Available from: Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402-9325 (GPO Stock No. 052-003-01125-5; $11.00; international customers add 25%).

EDRS Price - MF01/PC11 plus postage.

Document Type: Review Literature (070); Research Report (143)

Major Descriptors: *Courseware; *Educational Technology; *Government Role; *Instructional Improvement; *Research and Development; *Teacher Role

This report on the potential of new interactive technologies for improving learning examines developments in the use of computer-based technologies, analyzes key trends in hardware and software development, evaluates the capability of technology to improve learning in many areas, and explores ways to substantially increase student access to technology. The role of the teacher, teachers' needs for training, and the impact of federal support for educational technology research and development are reviewed as well. Specific topics addressed include the adoption of computer and video technologies; evaluation research; computer-assisted instruction (CAI) and intelligent CAI; mathematics and science; multimedia programs; database management; word processing; language arts; electronic networks; cost-effectiveness; software; and research and development. The future of classroom instruction is discussed in terms of networking and distance education, CD-ROM and computer/video convergence, hypermedia, integrated learning systems, and videodisks. Appended materials include a summary of state activities in educational technology; criteria used to evaluate educational software; principal programs of the U.S. Department of Education that are providing funds for technology in education; a list of acronyms; and a bibliography of contractor reports. Also included are a copy of the September 1988 OTA Report Brief entitled "Power On! New Tools for Teaching and Learning," and a September 15, 1988 press release announcing two videotapes on the influence and potential of educational technology in public schools, now available from SL Publications, New York.

ED289459

Technology Programs That Work.

Webb, Michael B., Ed.

Columbia Univ., New York, N.Y. Teachers College.

Dec 1984, 73p. National Diffusion Network Project. For descriptions of other NDN programs, see ED 266 134.

Sponsoring Agency: Office of Educational Research and Improvement (ED), Washington, DC. National Diffusion Network.

EDRS Price - MF01/PC03 plus postage.

Document Type: Non-Classroom Material (055); Directory (132); Project Description (141)

Major Descriptors: *Basic Skills; *Computer Uses in Education; *Demonstration Programs

This directory contains descriptions of 44 National Diffusion Network (NDN) programs that have been validated by the Joint Dissemination Review Panel of the Department of Education and make use of technology. The programs are organized into three sections. Section I describes 11 Lighthouse Projects in the areas of administrative processes/management; computer literacy and programming; computer-assisted instruction (CAI) for teaching secondary math, reading and math for grades 3 through 8, basic skills, adult education, in-service teacher training, and accounting; development and test approaches to telecommunications; computer-managed instruction (CMI); occupational training; special education; and K-8 computer literacy education. Information given for each project includes a program description, the technology used, sources of available software, services provided, and a contact name for additional information. Sections II and III describe 24 NDN-funded developer demonstrator projects and nine unfunded validated projects in the areas of basic and computer literacy; basic skills; career education; occupational education; CMI; a computer-assisted diagnostic-prescriptive program for underachievers; use of amplification technology as an instructional technique; cash flow forecasting; mass media services; and economic education. Information provided for each project includes a program description, evidence of its effectiveness, implementation and financial requirements, and services available at each site. NDN State Facilitators are listed, and title, geographical, and ERIC descriptor indexes are provided.

SPECIAL APPLICATIONS

Artificial Intelligence

ED296701

Intelligent Computer-Assisted Instruction: A Review and Assessment of ICAI Research and Its Potential for Education.

Dede, Christopher J.; And Others

Educational Technology Center, Cambridge, MA.

May 1985, 117p.

Sponsoring Agency: National Inst. of Education (ED), Washington, DC.

EDRS Price - MF01/PC05 plus postage.

Major Descriptors: *Artificial Intelligence; *Computer Assisted Instruction; *Computer Software

Document Type: Review Literature (070); Project Description (141)

The first of five sections in this report places intelligent computer-assisted instruction (ICAI) in its historical context through discussions of traditional computer-assisted instruction (CAI) linear and branching programs; TICCIT and PLATO IV, two CAI demonstration projects funded by the National Science Foundation; generative programs, the earliest application of artificial intelligence in education; mathematical models of learning; and recent developments such as dialogue-based tutorial systems. The second section describes ICAI systems and their components, i.e., the expertise module and types of knowledge representation schemes; the student module; and the communication module. Several examples of ICAI systems—SCHOLAR, WHY, SOPHIE, BUGGY & DEBUGGY, GUIDON, WEST, and GEOMETRY TUTOR—are presented in the third section, and the fourth looks at major themes in ICAI research and the current capabilities of ICAI systems. The fifth section discusses the potentials of ICAI for education and its implications for teachers, students, administrators, and researcher/developers. (77 references)

ED295610

AI in Reverse: Computer Tools That Become Cognitive.

Salomon, Gavriel

1988, 20p. Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April 5-9, 1988).

EDRS Price - MF01/PC01 plus postage.

Document Type: Review Literature (070); Research Report (143); Conference Paper (150)

Major Descriptors: *Artificial Intelligence; *Cognitive Processes; *Computer Assisted Instruction; *Computer Software; *Metacognition; *Reading Skills

The question of whether human thinking can come to simulate computer intelligence—i.e., AI in reverse—is addressed in this paper. Examples are given of three computer tools which perform several functions that constitute an intellectual partnership between student and tool. Such functions include: (1) assuming part of the intellectual burden in experimentation; (2) presenting learners with novel alternatives; (3) freeing the individual from lower level operations; (4) displaying intermediate processes; (5) providing intelligent tutelage; and (6) providing models of information representation, processes, and strategies. Conditions necessary for internalization of artificial intelligence functions are described, i.e., comprehensibility, generalizability, novelty, utility, explicitness, and mindful abstraction. An experiment in which 74 Israeli seventh graders were divided into three groups and interacted with a version of the software incorporating metacognitive guidance and content-specific questions (experimental group), questions only, or neither is then reported. Results show that the experimental group devoted the most time to reading the texts and scored highest on a posttest; these findings support the hypothesis that interaction with a tool that models reading-related metacognition leads to improved reading of new texts in another non-computerized setting. Implications of these findings for a cognitive-developmental theory, a cultural-communicational theory, and educational theory and practice are examined. (28 references)

Computer Equity

ED290439

Computers, Equity, and Urban Schools. Report from a Conference (Cambridge, Massachusetts, November 29-30, 1984).

Astrein, Bruce; Steinberg, Adria

Educational Technology Center, Cambridge, MA.

1985, 58p.

Sponsoring Agency: Ford Foundation, New York, N.Y.; National Inst. of Education (ED), Washington, DC.

EDRS Price - MF01/PC03 plus postage.

Document Type: Conference Proceedings (021); Position Paper (120); Project Description (141)

Major Descriptors: *Computer Literacy; *Equal Education; *Job Skills; *Urban Schools; *Vocational Education

This report summarizes a working conference held at the Educational Technology Center in the Harvard University Graduate School of Education to explore the uses of educational technology in urban schools and offer recommendations for developing policies and programs. Participants included urban practitioners, researchers, professors, policy analysts, and representatives of community-based institutions, computer corporations, and corporate and private philanthropy. Presentations and discussions focused on such concerns as the need to insist on equity in the distribution of computer hardware and software to all schools; community and parent involvement in bringing computer programs to the urban schools; whether urban students need to be computer literate, particularly as this relates to obtaining employment; and the need to incorporate computers into vocational programs in order to give these students a broader educational experience. The conference emphasized that insistence on equity in the distribution of computer hardware and software to all schools is the first step toward excellence, and it is noted that teachers and administrators who believe in their students' potential to learn and in the use of computers as a tool for motivating and educating them, will be needed if these goals are to be reached. A list of conference participants is appended, and a 13-item bibliography is provided.

ED295806

Mathematics/Computer Technology/Science: Myths and Realities of Student Gender as a Potential Factor in Achievement.

Butler, Dee

West Virginia State Dept. of Education, Charleston.

Jun 1987, 16p.

Available from: West Virginia Department of Education, 1900 Washington Street, E., B-252, Charleston, WV 25305 (no cost for single copy at present time).

EDRS Price - MF01/PC01 plus postage.

Document Type: Project Description (141)

Major Descriptors: *Computer Science Education; *Elementary School Mathematics; *Elementary School Science; *Secondary School Mathematics; *Secondary School Science; *Sex Bias;

The West Virginia Board of Education is committed by Title IX of the Education Amendments of 1972 and State Policy 4200, "Provision of Equal Opportunity in West Virginia Public Schools," to provide all students with equal access to courses and equal treatment once they are enrolled in those courses. Mathematics, computer technology and science are integral parts of the state's educational programs. This pamphlet provides reviews of research findings related to these three areas and looks at how the factors of gender, early learning, and achievement make a difference in continuing courses in mathematics, computer technology and science. It also addresses information on myths related to female and male students taking mathematics, computer technology and science courses and provides data on female and male students enrolled in these courses as well as other related information. It includes a quiz to help educators evaluate their programs for gender bias.

ED285577

Computer Equity and the Role of District Level Computer Coordinators.

King, Richard A.

Apr 1987, 24p. Paper presented at the Annual Meeting of the American Educational Research Association (Washington, DC, April 20-24, 1987).

EDRS Price - MF01/PC01 plus postage.

Document Type: Research Report (143); Conference Paper (150)

Major Descriptors: *Coordinators; *Equal Education; *Leadership; *Microcomputers

Attributes of North Carolina school systems that account for discrepancies in students' opportunities to learn about and with computers were investigated in this study, which explored relationships between microcomputer availability and financial and demographic data for a sample of 141 school districts to explore the dimensions of equity in computer education. Interviews with school personnel in 16 selected districts supplemented the statewide analysis as the importance of leadership in computer access and the role of the computer coordinator were examined in depth. Based on the results of the study, it was hypothesized that leadership and commitment at all levels in the educational hierarchy are more important for providing computer access for pupils than the demographic and financial characteristics of the school districts, and that appropriate uses of computers are guided more by the leadership abilities and commitment of local school personnel than by state directives. The following specific recommendations for improving computer equity were arrived at: (1) engage in statewide planning; (2) clarify roles of computer coordinators; (3) employ building-level computer specialists; (4) reduce inequities in computer use within the district; (5) prepare teachers for computer use in the curriculum; (6) acquire financial resources and seek state-level leadership; and (7) include computers in school improvement efforts. Thirteen references are listed.

ED287448

A Survey of Teachers' Perceptions, Opinions and Attitudes about Instructional Computing: Implications Regarding Student Equity.

Knupfer, Nancy N.

Apr 1987, 57p. Paper presented at the Annual Meeting of the American Educational Research Association (Washington, DC, April 20-24, 1987). For another paper on this study, see ED 285 547.

EDRS Price - MF01/PC03 plus postage.

Document Type: Research Report (143); Conference Paper (150); Test, Questionnaire (160)

Major Descriptors: *Computer Assisted Instruction; *Equal Education; *Microcomputers; *Teacher Attitudes

In order to assess the quantity and quality of equitable access to computers in Wisconsin public schools, teachers' perceptions, opinions, and attitudes about instructional computing were examined during the 1984-1985 school year. Questionnaires containing closed- and open-ended questions were mailed to all 510 sixth-grade teachers in K-6 structured public schools throughout the state. Follow-up telephone interviews with nonrespondents obtained data for comparison of respondent and nonrespondent groups. Descriptive statistics were compiled from frequency distributions, measures of central tendency, contingency tables using the chi-square statistic, and t tests. The alpha level for significance was set at .05. The major conclusion was that equity of student access to instructional computing is closely related to the attitudes and opinions of the teachers who work with those students. Based on these findings, it is suggested that, in addition to provision of training and better equipment, program planning and training tailored to the classes of opinion and attitude already existing in the schools would decrease inequitable decisions. Supplemental materials include a list of 24 references, statistical analyses, and a copy of the survey.

ED285995

Review of Home Economics Computer Software for Sex Bias and Stereotyping. Final Report from July 1, 1986 to June 30, 1987.

Pinellas County School Board, Clearwater, Fla.

30 Jun 19871, 18p.

EDRS Price - MF01/PC01 plus postage.

Document Type: Evaluative Report (142)

Major Descriptors: *Computer Software Reviews; *Courseware; *Home Economics; *Instructional Materials; *Sex Bias; *Sex Fairness

Because the field of home economics has long been dominated by females, concern has often been expressed that many of the audiovisual materials available for use in home economics classes are also female dominated; in an age when both males and females have equal access to home economics classes, this is a major concern. In addition, with the advent of computers, new software is constantly being developed, and home economics teachers have been using it. As a result, a project evaluated the software available for home economics in terms of sex bias. During the project, four Pinellas County, Florida, home economics teachers did extensive research to determine how usable software really is without inadvertently setting an example to students of sex bias or stereotyping. The teachers developed an appropriate evaluation tool and spent three days previewing the materials and completing the evaluation forms. Following this, the lead teacher conducted inservice education for 14 additional teachers that included discussion of sex bias and stereotyping, as well as giving teachers an opportunity to preview selected materials. A summary of the findings of the committee was given to each participant. In general, it was found that personalized programs (those that address the student by name) were very inviting to all students and more motivating as compared to third-person references; in addition, there was little if any chance for sex stereotyping. Overall, home economics computer software was found to be bias-free. Recommendations were made to improve research procedures for future software evaluations. (Workshop materials and the review form are included in the report.)

ED291356

Boys, Girls, and a Scarcity of Microcomputers: "They Get on It Before We Can Get to It".

Reece, Carol C.

13 Nov 1987, 12p. Paper presented at the Annual Meeting of the Mid-South Educational Research Association (16th, Mobile, AL, November 13, 1987).

EDRS Price - MF01/PC01 plus postage.

Document Type: Research Report (143); Conference Paper (150)

Major Descriptors: *Computer Assisted Instruction; *Elementary Schools; *Equal Education; *Microcomputers; *Sex Discrimination; *Sex Stereotypes

The main purposes of this survey were to: (1) assess the perceptions and attitudes of students about whether boys or girls spend more time working with computers; (2) explore whether individual students at school prefer working alone or with someone else; (3) explore the possibility that girls who have access to home computers also have older brothers at home; (4) inquire about parents' use or nonuse of computers at work or at home;

and (5) continue to assess the extent to which parents are providing home computers for daughters as well as for sons. A total of 212 fourth through sixth grade students from both private and public schools were surveyed over a two-year period in a deliberate effort to branch from a previous study in which fifth grade, seventh grade, and high school students were surveyed on similar issues. Chi-square analysis of the data for the present study failed to find significant sex differences with respect to any of the questions although instances of sex-typing in relationship to computers were identifiable in the survey responses. Based on the findings of this study, it is concluded that mandated computer instruction should be initiated at the third or fourth grade level, if not earlier, in order to overcome gender barriers to equitable computer learning at school and assumed future career opportunities associated with higher technology. Results of the statistical analysis are displayed in two graphs and 11 references are listed. (CGD)

Computer Ethics

ED294562
Computer Ethics Topics and Teaching Strategies.
DeLay, Jeanine A.
1987, 23p. Paper presented at the Michigan Association of Computer Using Learners (March, 1987).
EDRS Price - MF01/PC01 plus postage.
Document Type: Teaching Guide (052); Position Paper (120); Conference Paper (150)
Major Descriptors: *Computers; *Ethical Instruction; *Teaching Methods

An overview of six major issues in computer ethics is provided in this paper: (1) unauthorized and illegal database entry, surveillance and monitoring, and privacy issues; (2) piracy and intellectual property theft; (3) equity and equal access; (4) philosophical implications of artificial intelligence and computer rights; (5) social consequences of robotics and the automated office, human skill obsolescence, and job displacement; and (6) computers as tools of war. Materials and activities which are appropriate for teaching computer ethics at the middle or high school level are described, including readings, arguable premises, movies, case studies, the Eliza software program, data exercises, guidelines/policies, debates, conferences, and content analysis exercises. Two of these strategies—the arguable premise and the case method—are expanded upon for the high school setting, and ways in which computer ethics might fit into the curriculum are discussed. The agenda of a new organization, the Center for Applied Ethics and New Technologies, which provides curricular material on computing technology ethical topics, is also introduced. Seven case studies for classroom use are appended.

ED286461
A Model Code of Ethics for the Use of Computers in Education.
Shere, Daniel T.; Cannings, Terence R.
16 Apr 1986, 21p. Paper presented at the Annual Meeting of the American Educational Research Association (San Francisco, CA, April 20-24, 1986).
EDRS Price - MF01/PC01 plus postage.
Document Type: Non-Classroom Material (055); Research Report (143); Conference Paper (150)
Major Descriptors: *Computer Assisted Instruction; *Courseware; *Delphi Technique; *Ethics; *Guidelines; *Models

Two Delphi studies were conducted by the Ethics and Equity Committee of the International Council for Computers in Education (ICCE) to obtain the opinions of experts on areas that should be covered by ethical guides for the use of computers in education and for software development, and to develop a model code of ethics for each of these areas. Conducted in 1984, the first study used two populations, a Delphi process panel of 19 nationally recognized experts who identified guidelines, and a sample of randomly selected school administrators who were asked to rate the appropriateness of these guidelines for inclusion in a code of ethics for computer use in education. The seven members of the ICCE Ethics and Equity Committee, who represented Israel, Canada, England, and a cross-section of the United States, acted as the Delphi panel for the second study, which focused on the refinement of the guidelines developed by the first one. The Delphi instrument was found to be an appropriate technique to compile the principles for the two codes, which were validated both by practitioners and the international Ethics and Equity Committee. It is noted that issues related to awareness and implementation of the code still need to be addressed by the committee. The code for computer use addresses issues related to curriculum, access to computers, software, teachers, future impact/consequences, privacy/confidentiality, students, other constituents, computer applications, quality, and school organization. The code for software development covers issues related to software, hardware, and overlapping conduct between the user and the developer. Copies of both codes are included as well as an eight-item reference list.

Computer Literacy

ED287476
Junior High Computer Literacy. Curriculum Guide = L'Informatique au Secondaire 7-8-9. Guide Pedagogique.
Alberta Dept. of Education, Edmonton. Curriculum Branch.
Sep 1984, 80p. For the curriculum guide for Computer Literacy 10, see ED 287 475.
EDRS Price - MF01/PC04 plus postage.
Document Type: Teaching Guide (052)
Major Descriptors: *Computer Literacy; *Course Content; *Teaching Methods

This curriculum guide provides information in both English and French for the teaching of computer literacy in junior high schools in the Canadian province of Alberta. A basic introductory course developed in response to the need to acquaint junior high school students with a general understanding of computers and their use, the program for grades 7, 8, and 9 has been developed in keeping with the elementary computer literacy program introduced in 1983 and the courses offered at the high school level (Computer Literacy 10 and Computer Processing 10-20-30). This guide covers four major areas: (1) The Computer Literacy Program (rationale and philosophy, major goals, core-elective format, program structure, core topics, provisions for differences in student backgrounds, course implementation, hardware and software components, methodology, and learning resources); (2) Program of Studies (junior high school computer literacy); (3) Elective Component (notes concerning the elective and suggested elective topics); and (4) Classroom Instructional Notes (evaluation, provisions for the gifted and talented, and provisions for the handicapped and learning disabled). Two sources of additional information on learning resources and support materials are appended to the English version of the guide, while appendices to the French version include descriptions of five software programs and four references in French.

ED287475
Computer Literacy 10. Curriculum Guide=Informatique 10. Guide Pedagogique.
Alberta Dept. of Education, Edmonton.
1984, 104p. For the junior high school curriculum guide, see ED 287 476.
EDRS Price - MF01/PC05 plus postage.
Document Type: Teaching Guide (052)
Major Descriptors: *Computer Literacy; *Course Content; *Individual Differences

This curriculum guide provides information in both English and French for teaching the course, Computer Literacy 10, in the high schools of the Canadian province of Alberta. A basic introductory course developed in response to the need to acquaint high school students with a general understanding of computers and their use, Computer Literacy 10 has been designed in conjunction with computer literacy programs introduced at both the elementary and junior high levels. This guide covers four major areas: (1) The Computer Literacy Program (rationale and philosophy, major goals, core-elective format, core topics, provisions for differences in student background, course implementation, hardware and software requirements, methodology, and learning resources); (2) Program of Studies (the core component); (3) Elective Component (notes concerning the elective and suggested elective topics); and (4) Classroom Instructional Notes (evaluation, provisions for the gifted and talented, and provisions for the learning disabled and the handicapped). The first appendix in the English version provides a table showing the correlation of resources to core topics and the second is an annotated listing of additional resources and support materials. Appendices to the French version include descriptions of three computer programs and an annotated listing of three reference sources in French.

ED295619
Teacher as Learner: The Impact of Technology. Conference Report (Cambridge, Massachusetts, June 1985). CR86-4.
Educational Technology Center, Cambridge, MA.
May 1986, 27p. For the report of an earlier conference, see ED 295 616.
EDRS Price - MF01/PC02 plus postage.
Document Type: Conference Proceedings (021); Project Description (141)
Major Descriptors: *Computer Assisted Instruction; *Professional Development; *Teacher Attitudes; *Teacher Education; *Teacher Role

Inspired by the format of and discussion at the 1984 conference, the conference described in this report examined the question of how the computer might stimulate teachers' learning and under what conditions that stimulation might encourage reform. An overview briefly summarizes the presentations. Several conference themes grouped under the headings of Opportunities to Learn and Conditions for Learning are then discussed: (1) computers may provide teachers with opportunities to grow through pioneering and tinkering; (2) computers may prompt some teachers to become fresh learners of their own subjects; (3) the computer may provide teachers with the opportunity to learn about learning; (4) computers may prompt some teachers to revise their teaching style; (5) computers may prompt teachers and others to engage in a critical examination of the regularities of schooling; (6) teachers must be partners in innovation; (7) teachers need time to learn; and (8) teachers need collegial advisors. It is concluded that teaching with new technologies can create powerful opportunities for teachers to become eager students, although this new learning is unlikely to lead to meaningful school change if it lacks a supportive organizational context. A directory of participants is appended. (25 references)

ED290429

Computer Literacy. Is It for Everyone?

Kurshan, Barbara

1986, 11p. Paper presented at the World Congress on Education and Technology (Vancouver, British Columbia, Canada, June 1986).

EDRS Price - MF01/PC01 plus postage.

Document Type: Review Literature (070); Position Paper (120); Conference Paper (150)

Major Descriptors: *Computer Literacy; *Curriculum Development

This review of the literature begins by exploring the development of computer literacy as a discipline since its introduction in colleges and universities around 1965 and in economically privileged high schools around 1970. The impact of a conference sponsored by the National Science Foundation and Human Resources Research Organization in 1980 on the evolution of computer literacy both as a concept and as a curriculum is then discussed. It is noted that this was the beginning of the debate over whether or not computer literacy should include programming. The different approach taken by the "new" computer literacy in the early 1980s is also briefly discussed, and five predictions for the future based on a consensus of computer literacy "thinkers" are presented: (1) software development will improve and increase; (2) textbook publishers will continue to control computer literacy curriculum; (3) teachers and administrators will continue to need more and better training; (4) the use of technology will alter the organization of schools; and (5) computer hardware will continue to drop in price and improve in performance. Discussions of the issues involved in three major areas that should be addressed by planning teams—training, hardware and software acquisition, and curriculum—conclude the paper.

ED286491

The Effect of Microcomputers in the Home on Computer Literacy Test Scores.

Sparks, Judith A.

Nov 1986, 26p. Requirement for the Degree of Education Specialist, Central Missouri State University.

EDRS Price - MF01/PC02 plus postage.

Document Type: Research Report (143); Test, Questionnaire (160); Dissertation (040)

Major Descriptors: *Computer Literacy; *Family Environment; *Family Influence; *Microcomputers This research paper based upon a thesis of the same title examines whether a statistically significant difference exists between computer literacy test scores for those students having a microcomputer in the home and those who do not. Relationships between student gender, adult education level, adult occupation, adult computer use, educational software, and computer brands and their relationship to the test scores are also examined. Data were collected from 693 seventh grade students in a Missouri junior high school who were administered the Northwest Regional Educational Laboratory Computer Literacy Test Grade Seven and a researcher developed survey designed to collect demographic data. The data were analyzed using the ANOVA Statistical Analysis System package, and statistically significant differences were found at the .05 level between the computer literacy scores of students who had educational software at home and those who did not. A relationship between the educational level, occupation, and use of computer by the male adult in the home and the test scores was also identified, although the gender of the student was not found to be related to literacy test scores. No trend was found toward ownership of a particular brand of computer. A review of the literature and the student survey questionnaire are included.

Copyright

ED285598

Copyright and New Technologies. Hearings before the Subcommittee on Courts, Civil Liberties, and the Administration of Justice of the Committee on the Judiciary, House of Representatives, Ninety-Ninth Congress, First and Second Sessions on Copyrights and New Technologies (November 20, 1985, and August 7, 1986).

U.S. Congress, Washington, D.C. House Committee on the Judiciary.

1987, 361p. Serial No. 101. Document contains small, light type.

Available from: Superintendent of Documents, Congressional Sales Office, U.S. Government Printing Office, Washington, DC 20402.

EDRS Price - MF01/PC15 plus postage.
Document Type: Legal Material (090)
Major Descriptors: *Cable Television ; *Communications Satellites; *Copyrights; *Federal Regulation; *Legal Responsibility; *Programing (Broadcast)

Conducted to investigate copyright questions that have arisen from the development of new communications technologies which were not foreseen when the copyright law was rewritten in 1976, these hearings are particularly concerned with the areas of low-power television (LPTV) and satellite communications. Following session opening remarks, statements are provided from: (1) Ralph Oman, Register of Copyrights and Assistant Librarian of Congress; (2) Richard G. Hutcheson III, Community Broadcasters Association (secretary-treasurer); (3) Richard L. Brown, Satellite Television Industry Association, Inc./SPACE (general counsel); (4) Jack Valenti, Motion Picture Association of America (president); (5) Edward L. Taylor, Tempo Enterprises, Inc. (president and chief executive officer) on behalf of Southern Satellite, United Video, Inc., and Eastern Microwave, Inc.; (6) James P. Mooney, National Cable Television Association (president); and (7) Preston Padden, Association of Independent Television Stations (president). Letters are also included from: (1) Representative Robert W. Kastenmeier and Senator Charles McC. Mathias, Jr.; (2) Dorothy Schrader; and (3) Richard L. Brown. A program license agreement between Viacom Enterprises and KOKI-TV, Tulsa, Oklahoma is also included. Appendices include the text of House of Representatives Bills 3108, 5126, and 5572; House Report No. 99-615 and Public Law 99-397 relating to LPTV/copyright; materials relating to earth station/copyright provided by witnesses from the Copyright Office, the National Cable Television Association, the Satellite Television Viewing Rights Coalition, Inc., the National Association of Broadcasters, and the Association of Independent Television Stations, Inc.; and letters relating to earth station/copyright from the Honorable Timothy Wirth, Anthony Castelli, Edwin M. Durso, and Douglas A. Riggs.

ED296381
Copyright Protection for Computer Software: Is There a Need for More Protection?
Ku, Linlin
Jul 1988, 36p. Paper presented at the Annual Meeting for the Association for Education in Journalism and Mass Communication (71st, Portland, OR, July 2-5, 1988).
EDRS Price - MF01/PC02 plus postage.
Document Type: Conference Paper (150); Review Literature (070)
Major Descriptors: *Computer Software; *Copyrights

Because the computer industry's expansion has been much faster than has the development of laws protecting computer software and since the practice of software piracy seems to be alive and well, the issue of whether existing laws can provide effective protection for software needs further discussion. Three bodies of law have been used to protect software: (1) trade secret and contract (effective protection if the software is a secret); (2) patent (the equivalent of a monopoly on a computer program); and (3) copyright. The Copyright Act of 1976 and the Computer Software Copyright Act of 1980 have both served to give some protection to computer software, but the issue of proving the copyright owner's rights have been infringed upon is still a problem. Several traditional and non-traditional tests have been developed to show substantial similarity between the copyrighted work and the pirated version, all of which are problematic. Two factors must be given attention when considering whether increased copyright protection should be given to software: any interpretation of the copyright statute should (1) not exceed principles suggested by legislative and judiciary history; and (2) not put too much emphasis on the copyright owner's economic interests, which will only impose a high cost on society. (One hundred and twenty-four notes are included.)

Counseling and Guidance

ED296194
Decision Support Systems and the Conflict Model of Decision Making: A Stimulus for New Computer-Assisted Careers Guidance Systems.
Ballantine, R. Malcolm
Mar 1988, 11p. Paper presented at the Annual Meeting of the American Association for Counseling and Development (Chicago, IL, March 20-23, 1988).
EDRS Price - MF01/PC01 plus postage.
Document Type: General Report (140); Conference Paper (150)
Major Descriptors: *Career Guidance; *Computer Oriented Programs; *Decision Making

Decision Support Systems (DSSs) are computer-based decision aids to use when making decisions which are partially amenable to rational decision-making procedures but contain elements where intuitive judgment is an essential component. In such situations, DSSs are used to improve the quality of decision-making. The DSS approach is based on Simon's (1960) bounded rationality model of decision-making. Replacing that model with a more detailed model of decision-making would increase the usefulness of DSSs. Janis and Mann's (1978) conflict theory of decision-making sees most significant decisions to be somewhat stressful. The challenge of a threat or an opportunity starts a decision-making process in which four questions are asked, resulting in the possibility of five basic outcomes: (1) unconflicted adherence, in which the person determines that the best course of action is to do nothing; (2) unconflicted change, in which the most immediately available alternative is selected without further consideration; (3) defensive avoidance, in which the problem is ignored; (4) hypervigilance, in which panic sets in; and (5) vigilance, in which a full and effective search of the alternatives can be made. The model also contains a Decisional Balance Sheet with which to evaluate decisions. This model of decision-making should enable the decision support model to be extended in a way which suggests new approaches to using computers as decision aids, especially in the area of career guidance.

ED290466
Computers in School Psychology: An Overview.
McCullough, C. Sue
International Council for Computers in Education, Eugene, Oreg. 1985, 71p.
Report No.: ISBN-0-924667-24-9
Available from: International Council for Computers in Education, University of Oregon, 1787 Agate Street, Eugene, OR 97403-1923 (1-4 copies $10.00 each, prepaid).
EDRS Price - MF01 plus postage. PC not available from EDRS.
Document Type: Position Paper (120); Evaluative Report (142)
Major Descriptors: *Computer Uses in Education; *Database Management Systems; *Information Networks; *Microcomputers; *School Psychologists

This discussion of the potential of current and projected advances in microcomputer technology for the field of school psychology begins by describing some current applications, including test administration, scoring and analysis, report writing, and data management. Fourteen suggestions for future computer applications in this field are then presented as a way to stimulate creative thinking by the school psychologist who is a also a computer enthusiast. The report concludes with brief discussions of issues in the areas of professional status, ethics, research, and theory, as they relate to current and future computer use by school psychologists. A technical overview is included to provide novices with an introduction to computer technology. A glossary is also provided, and 10 references are listed.

ED287140
Counselors and Computers. Highlights: An ERIC/CAPS Fact Sheet.
Walz, Garry R.
ERIC Clearinghouse on Counseling and Personnel Services, Ann Arbor, Mich.
1983, 3p.
Available from: ERIC/CAPS Clearinghouse, University of Michigan, 2108 School of Education, Ann Arbor, MI 48109-1259 (free).
EDRS Price - MF01/PC01 plus postage.
Document Type: ERIC Product (071)
Major Descriptors: *Computer Assisted Testing; *Computer Oriented Programs; *Computer Uses in Education; *Counselors; *Program Design

Possible threats and promises perceived by counselors when computers are introduced into the counseling field are examined in this fact sheet. Computer-assisted counseling and computer-managed counseling are discussed. A seven-step model for designing a "hi-tech" counseling program is presented.

Interactive Video

ED286492
Laser Videodiscs and the Curriculum.
Ediger, Marlow
1987, 16p.
EDRS Price - MF01/PC01 plus postage.
Document Type: Position Paper (120)
Major Descriptors: *Curriculum Design; *Educational Philosophy; *Learning Strategies; *Videodisks

Videodiscs have much to offer in developing the school curriculum, but teachers must use definite criteria in planning teaching-learning situations that will enable students to achieve on an individual basis. Thus, students should find meaning, interest, purpose, provision for individual differences, and a balance among objectives in their learning activities. Diverse philosophies of education may be utilized in videodisc technology; i.e., realism, experimentalism, idealism, and existentialism may be stressed as philosophies of education to provide direction and guidance in teaching-learning situations. The psychology of learning also needs to be utilized to assist each student to achieve as much as possible. Thus a behavioristic approach and considerable student input in ongoing lessons and units should be used to provide logical and psychological curricula, as well as inductive procedures to lead students to make relevant generalizations, and deductive teaching to assist them in moving from a generalization to its specifics.

ED287260
Interactive Video for Special Education. Digest #440.
Elting, Susan; Eisenbarth, Janet
ERIC Clearinghouse on Handicapped and Gifted Children, Reston, Va.
1986 3p.
Sponsoring Agency: Office of Educational Research and Improvement (ED), Washington, DC.
Available from: ERIC Clearinghouse on Handicapped and Gifted Children, 1920 Association Dr., Reston, VA 22091 (4 titles free, $1.00 for each additional set of 4 titles).
EDRS Price - MF01/PC01 plus postage.
Document Type: ERIC Product (071); ERIC Digests (Selected) (073)
Major Descriptors: *Disabilities; *Interactive Video; *Videodisks

This brief analysis defines a videodisc, describes the term "interactive video" and distinguishes among three categories of videodisc systems, defined according to the level of interactivity they provide. Advantages and applications of videodisc (e.g., simulations) are noted. A final section describes selected projects focusing on the use of videodiscs in special education instruction.

ED295672
The Development of a Research Agenda and Generic Disc for Computer-Based Interactive Video.
Grabowski, Barbara; Pearson, Robert
Jan 1988, 15p. In: **Proceedings of Selected Research Papers presented at the Annual Meeting of the Association for Educational Communications and Technology (New Orleans, LA, January 14-19, 1988).** For the complete proceedings, see ED 295 621.
EDRS Price - MF01/PC01 plus postage.
Document Type: Research Report (143); Conference Paper (150)
Major Descriptors: *Computer Assisted Instruction; *Instructional Design; *Instructional Effectiveness; *Interactive Video; *Research Design; *Videodisks

This paper describes the development of a conceptual framework for conducting research using computer based interactive video and a generic disc as research tools. It is argued that computer based interactive video represents the beginnings of a truly computer based learning system. An altered version of the 1984 Grabowski and Whitney conceptual framework is presented as a way to guide thinking about the interaction of accountable components of instruction. The factors in this new framework that affect affective and cognitive outcomes—learner characteristics, content type, message design, and instructional strategies—are considered in relation to computer based interactive video and computer based learning systems. Proposed research is described that will be based on these factors. This research will use a series of visual and auditory stimulus materials pressed onto a videodisc to explore those learner characteristics for which message design can have a major impact. It is noted that the treatments for the various studies can be altered through the sequencing, selection of stimulus material, and the addition or reorganization of text. The framework is illustrated in a figure. (24 references)

ED292076
Applications of Videodisc Technology to Language Arts, Grades K-12: A Review of the Literature.
Lewis, Martina E.
Apr 1988, 31p. Portions of this paper presented at the Annual Meeting of the National Council of Teachers of English (77th, Los Angeles, CA, November 20-25, 1987).
EDRS Price - MF01/PC02 plus postage.
Document Type: Review Literature (070); Conference Paper (150)
Major Descriptors: *Interactive Video; *Videodisks

This monograph traces the history of videodisc technology, describes the videodisc and its functions, reviews classroom applications and limitations, and discusses the future use of videodisc technology in elementary and secondary language arts classes. Two videodisc formats are discussed—constant linear velocity (CLV), and constant angular velocity (CAV). Five levels of interactivity in interactive video technology are outlined, and the capabilities and applications to education are presented for each level. The section on videodisc technology identifies various educational uses for the videodisc, including drill and practice, tutorial, and simulation activities. The monograph also considers the advantages of using the videodisc in comparison with 16-mm film and videotapes, and its effectiveness in teaching science, math, AIDS education, and social skills to handicapped children is also noted. Several projects employing videodisc technology are examined, including the Media Development Project for the Hearing Impaired (MDHPI), Interactive Videodiscs in Special Education Technology (IVSET), and Principle of the Alphabet Literacy System (PALS). A list of over-the-counter videodisc films is cited for use in language arts classes. (Figures of the levels of interactivity with applications to education, response of proponents of videodisc technology to public educators' concerns, and interactive videodiscs in language arts are included, and 69 references are appended.)

ED288498

Coordination and Evaluation of Videodisc and Microcomputer Programs. Final Technical Report.

McLaughlin, Donald H.; And Others

American Institutes for Research in the Behavioral Sciences, Palo Alto, Calif.

Dec 1983, 179p.

EDRS Price - MF01/PC08 plus postage.

Document Type: Research Report (143); Test, Questionnaire (160)

Major Descriptors: *Basic Skills; *Educational Innovation; *Electronic Mail; *Interactive Video; *Microcomputers; *Videodisks

This report provides information on the background, methodology, and findings of the Videodisc-Microcomputer (ViM) Network project, which brought together over 40 schools in 15 states to explore the potential of a new technology for basic skills instruction. Initiated in 1981 and completed at the end of 1983, the project involved a wide variety of activities, ranging from software development and documentation to equipment acquisition and repair, including on-site and telephone consultations and problem-solving for participating schools, and the production of a series of newsletters and a descriptive network directory. Background material provides descriptions of interactive videodisc technology, electronic mail technology, and innovations in the schools. Site selection, overviews of support activities for interactive videodisc and electronic mail, and observations are included in the section on methodology, and the findings are reported under four broad headings: (1) Availability and Durability of Hardware; (2) Availability and Usability of Videodiscs; (3) Needs, Skills, and Time of School Staff; and (4) Communication via Electronic Networks. Eight appendices make up the major part of the report: (1) Participants in the ViM Network; (2) Sample of the ViM Network Newsletter; (3) ViM Network Directory; (4) Reprint of Articles from Videodisc News; (5) Instructions for ViM-SCRIPT; (6) Example of a ViM Script; (7) Classroom Teacher's Courseware Assessment Form; and (8) Videodisc-Microcomputer Usage Log. Eight references are also provided.

ED292673

The Effects of Slide/Sound Computer Based Instruction on Students' Achievement and Retention.

Pauline, Ronald F; Bell, Paul E.

1988, 17p. Paper presented at the Annual Meeting of the National Association for Research in Science Teaching (61st, Lake of the Ozarks, MO, April 10-13, 1988).

EDRS Price - MF01/PC01 plus postage.

Document Type: Research Report (143); Conference Paper (150)

Major Descriptors: *Computer Uses in Education; *Earth Science; *Interactive Video; *Secondary School Science; *Teaching Methods

Previous studies have documented the effectiveness of feedback in improving students' achievement, but few studies have examined the effectiveness of summaries or reviews. This study examines the respective and combined effects of feedback and review on students' achievement, retention, and level of cognitive development. A total of 55 ninth-grade students comprised five treatment groups which received an interactive slide/sound computer earth science lesson on "The History of the Earth." All groups received 26 self-test questions throughout the program. The control group received no feedback to their responses to the self-test questions and no reviews for each of the seven sections of the program. One group received non-content feedback for the responses and no reviews, a second group received content feedback and no reviews, a third group received non-content feedback and reviews; and the fourth group received content feedback and reviews. All subjects were given a 28-item achievement test immediately following the computer treatment and the same achievement test one week later. The study concluded that providing students with feedback produced significant increases in achievement, retention, and higher-order learning while a review produced significant improvement only in higher-order learning.

ED288515

Using Videodiscs in Instruction: Realizing Their Potential through Instructional Design. IDD&E Working Paper No. 4.

Reigeluth, Charles M.; Garfield, Joanne M.

Syracuse Univ., N.Y. School of Education.

Sep 1980, 42p.

EDRS Price - MF01/PC02 plus postage.

Document Type: Review Literature (070); Position Paper (120)

Major Descriptors: *Computer Assisted Instruction; *Courseware; *Instructional Design; *Interactive Video; *Learning Theories; *Videodisks

Arguing that the systematic application of knowledge about instruction to videodisc technology is essential if the full potential of this medium is to be realized, this paper begins by discussing the need for intelligent videodisc technology in our educational system. A brief review of the state of the art in intelligent videodisc systems, which describes their capabilities and limitations, is followed by a similar review of some aspects of instructional theory that have implications for the design of hardware, software, and courseware for such systems. Some of the problems inhibiting the introduction of videodisc into education are then discussed with emphasis on the lack of sufficient high-quality courseware. Finally, a section on new horizons suggests solutions to these inhibiting factors under the rubrics of general recommendations and recommendations for making better use of present knowledge, for the design of hardware and software, and for the development of instructional models and theories for videodisc systems. A 13-item reference list is provided.

ED291601
The ETC Science Videodisc Project: A Report of Research in Progress. Technical Report 85-18.
Storey, Kim S.; Janszen, Karen
Educational Technology Center, Cambridge, MA.
Jul 1985, 66p.
EDRS Price - MF01/PC03 plus postage.
Document Type: Project Description (141)
Major Descriptors: *Computer Uses in Education; *Educational Technology; *Interactive Video; *Secondary School Science; *Videodisks

The teaching and learning opportunities created by combining existing television programming with the kinds of interactivity offered by microcomputers have not been fully investigated by videodisc designers or science educators. The Videodisc Project Group, a subsection of Educational Technology Center's New Technologies Group, is: (1) conducting research on the educational effectiveness of videodiscs for teaching science; and (2) studying the process of videodisc creation by designing, producing, and evaluating an interactive videodisc. This document is designed to provide a status report on the research. The research videodisc, designed for use with middle school students, presents science subject matter in a manner that both illustrates and elicits the application of scientific modes of inquiry. It utilizes existing science television programs from the WGBH Educational Foundation and the Children's Television Workshop and will be produced using the authoring system Authority (TM), developed by Interactive Training Systems, Inc. The process of creating the research videodisc revealed design opportunities and constraints for retrofitting videodiscs. Because of the unchangeable nature of existing visuals, retrofitting is a difficult method for creating educational videodiscs in which content and instructional variety are important.

ED295617
The Integrated Design and Use of Computers and Television in Education. TR-85-20.
Storey, Kim S.; Julyan, Candace L.
Educational Technology Center, Cambridge, MA.
Jul 1985, 134p.
EDRS Price - MF01/PC06 plus postage.
Document Type: Teaching Guide (052); Research Report (143); Test, Questionnaire (160)
Major Descriptors: *Computer Assisted Instruction; *Educational Television; *Material Development; *Multimedia Instruction; *Teacher Role

The goals of this study were to understand the expectations of both designers and teachers for the design and use of packages that integrate computer and television technologies, and to investigate the implementation of these packages in the classroom. Interviews were conducted with eight designers of "The Voyage of the Mimi" (MIMI), a package which explores scientific and mathematics concepts using a series of episodes about whale research, and 10 designers of "Solutions Unlimited" (SOLUTIONS), a package that focuses on problem solving and computer applications. A total of 32 teachers, 21 Massachusetts teachers using MIMI and 11 Wisconsin teachers using SOLUTIONS, were interviewed both before and after utilizing the package. Results were examined in the following areas: (1) designers' assumptions and principles, including the development process, logistical considerations, integration of technology, teacher role, and reflections on the project; (2) profiles of teachers and classrooms; (3) strategies of use, including support and training, logistics, teacher role, and time allotment; and (4) effects on teaching and learning, including appeal to teachers and students, learning opportunities, appeal of individual components, evaluation of student learning, and future use. Package materials, interview questionnaires, analyses of teacher responses, and data on how the packages were acquired are appended. (7 references)

ED296708

Proceedings of the National Videodisc Symposium for Education: A National Agenda (1st, Lincoln, Nebraska, November 12-14, 1986).

Sybouts, Ward, Ed.; Stevens, Dorothy Jo, Ed.

Nebraska Univ., Lincoln. Div. of Continuing Studies.

1987, 115p.

EDRS Price - MF01 plus postage. PC not available from EDRS.

Document Type: Conference Proceedings (021); Position Paper (120); Project Description (141)

Major Descriptors: *Computer Assisted Instruction; *Educational Planning; *Instructional Design; *Instructional Development; *Interactive Video; *Videodisks

This symposium was a working meeting to develop an agenda for future action in education regarding videodisc technology. Following an introduction, three major presentations are provided: "An Introduction to Videodisc Technology" (Ronald W. Nugent); "Videodisc Applications and Implications for Education" (Orbry Holden); and "Planning Videodiscs in the Little Red Schoolhouse" (Ward Sybouts). Individual presentations on the use of videodiscs and research on their development and applications are then presented in 17 papers, which address such issues as the development of videodisc instructional programs; teacher preservice and inservice education in videodisc instruction; current uses of videodisc technology in public schools; interactive videodisc instructional programs in elementary classrooms, high school science, and university settings; use of interactive video to teach employment interview skills; and frameworks for examining and evaluating videodisc programs in public schools. Concluding remarks by John Prasch are also provided, as well as recommendations for a National Agenda for the Implementation of Videodisc and Laser Technology in Education; a brief description of the Second Annual Videodisc Symposium for Educators—Implementation of the Agenda to be held in October 1987, for which no proceedings have been published; and a list of the 1986 symposium participants. The text is supplemented by tables and figures, and seven of the 20 presentations include bibliographic references.

Management/Administration

ED289251#

Administrative Uses of Computers in the Schools.

Bluhm, Harry P.

1987; 310p. Report No.: ISBN-0-13-008467-0

Available from: Publication Sales, Prentice-Hall, Inc., 200 Old Tappan Road, Old Tappan, NJ 07675 ($28.00 plus postage and handling).

Document not available from EDRS.

Document Type: Book (010); Non-Classroom Material (055)

Major Descriptors: *Administrator Responsibility; *Computers; *Computer Uses in Education; *Educational Administration; *Microcomputers

Intended for school administrators, this book provides a comprehensive account of how computer information systems can enable administrators at both middle and top management levels to manage the educational enterprise. It can be used as a textbook in an educational administration course emphasizing computer technology in education, an introduction to the nature and scope of administrative computing, and a resource book for school officials. Part One introduces the reader to the purpose and benefits of a computer information system, computer competencies for administrators, and the stages and types of growth a computer system undergoes before it attains maturity. Part Two discusses how the computer can be a management tool for instructional applications such as computer-managed instruction and computer-assisted testing, and for instructional support applications in the administrative office such as business operations, grade reporting, attendance accounting, scheduling, and standardized test scoring. Part Three addresses software issues and choices confronting school officials regarding instructional and instructional support computer applications. Major issues discussed include software evaluation and selection, user training, costs, piracy, and the security of data files. The merits of general purpose, task-specific, and integrated software applications are examined. Part Four outlines the role of district or school computer policy in managing the computer resource. Policy analysis is applied to such issues as computer acquisition, maintenance, location, and networking. Appended are a glossary of computer terminology, references, support resources, and an index.

ED290428

Computer Disaster Recovery Planning.

Clark, Orvin R.

22 Oct 1986, 23p. Paper presented at the Annual International Meeting of the American Society of Business Officers (San Francisco, CA, October 22, 1986).

EDRS Price - MF01/PC01 plus postage.
Document Type: Non-Classroom Material (055); Conference Paper (150)
Major Descriptors: *Computer Software; *Data Processing; *Emergency Programs

Arguing that complete, reliable, up-to-date system documentation is critical for every data processing environment, this paper on computer disaster recovery planning begins by discussing the importance of such documentation both for recovering from a systems crash, and for system maintenance and enhancement. The various components of system documentation are then explained, followed by descriptions of the three stages of creation of complete system documentation: (1) design and development documentation; (2) backup documentation; and (3) documentation reports. Environmental controls, a second major aspect of disaster recovery planning, are then discussed, with emphasis on problems with the electrical power supply such as "blinks," "brownouts," and "blackouts." Ways to ensure an uninterruptable power supply, voltage tolerance of the computer's chart, and sources of assistance are also considered. A discussion of safeguards that can be used to protect the data processing system, including various kinds of insurance, concludes the paper.

ED296466
Using Microcomputers in School Administration. Fastback No. 248.
Connors, Eugene T.; Valesky, Thomas C.
Phi Delta Kappa Educational Foundation, Bloomington, Ind.
1986, 38p. Sponsored by the Fordham University Chapter of Phi Delta Kappa.
Report No.: ISBN-0-87367-248-8
Available from: Publications, PDK Foundation, 8th Street and Union Avenue, Box 789, Bloomington, IN 47402 ($.90 prepaid; quantity discounts).
EDRS Price - MF01/PC02 plus postage.
Document Type: Non-Classroom Material (055)
Major Descriptors: *Computer Managed Instruction; *Computer Uses in Education; *Educational Administration; *Management Information Systems; *Microcomputers

This "fastback" outlines the steps to take in computerizing school administration. After an introduction that lists the potential benefits of microcomputers in administrative offices, the booklet begins by delineating a three-step process for establishing an administrative computer system: (1) creating a district-level committee of administrators, counselors, librarians, special education teachers, at least one computer expert, and other end-users to identify school administrative functions best suited for computerization; (2) to locate appropriate computer software to accomplish the administrative tasks that have been identified; and (3) to select the hardware that will run the software that has been chosen. The second chapter, selecting software, discusses stand-alone versus integrated programs, disk operating systems, word processing, database management, spreadsheets, accounting, data analysis and graphics, and special applications. The third chapter, selecting hardware, discusses 8-bit machines, 16-bit machines, computer power, peripheral devices, and vendors. The final chapter addresses the problem of getting started and discusses consultants, establishing priorities, staff training, and the logistics of transferring to a computerized system.

ED289483
Software Applications To Increase Administrative and Teacher Effectiveness.
Garland, Virginia E.
Nov 1985, 10p. Paper presented at the Annual Conference of the National Council of States on Inservice Education (10th, Denver, CO, November 22-26, 1985). Attached materials use faint, dot matrix print.
EDRS Price - MF01/PC01 plus postage.
Document Type: Teaching Guide (052); Conference Paper (150)
Major Descriptors: *Database Management Systems; *Microcomputers; *Spreadsheets; *Word Processing

Arguing that the most effective types of managerial computer software for teacher use are word processing, database management, and electronic spreadsheet packages, this paper uses Apple Writer, PFS File, and VisiCalc as examples of such software and suggests ways in which they can be used by classroom teachers. Applications of Apple Writer that are described include use as an instructional tool to improve student writing skills; the design of form letters and class mailing lists; and the design and formatting of frequently used curriculum materials, including written examinations, syllabi, outlines, biographies, and assignments. Suggested applications of PFS File include the creation of longer mail lists; creation and sorting of class lists with students' addresses, parents' names, grades, and assignments; and generation of address labels. Uses for ViciCalc include keeping records of student grades and averaging grades at report card time. Samples of some materials produced using such software packages are attached.

ED290440
Computers in Instruction Plan.
Hawaii State Dept. of Education, Honolulu. Office of Instructional Services.
Aug 1987, 244p.

Report No.: RS-87-2341
EDRS Price - MF01/PC10 plus postage
Document Type: Non-Classroom Material (055); Evaluative Report (142)
Major Descriptors: *Computer Assisted Instruction; *Computer Literacy; *Computer Managed Instruction; *Computer Science Education; *Online Searching; *Special Education

This report details the Hawaii State Department of Education's plan for the use of computers and computer-related technologies in instruction and instructional support. Four areas of implementation are identified: (1) computer literacy, which includes exploratory computer literacy, computer science, and vocational-technical education; (2) computer-assisted instruction; (3) computer-based information retrieval; and (4) computer-managed instruction. Descriptions of both current and emerging uses of computer technology in the Computers in Instruction Program are provided in this plan, along with goals and directions for each of the four areas of implementation and the three components of computer literacy. The text is supplemented with a glossary and nine appendices which make up more than two-thirds of the document. They include: information on program developments; equipment acquisition guidelines; educational specifications for a computer resource room; educational specifications for a career resource center; a framework for exploratory computer literacy for grades K-12; a secondary task force report; a rationale and specifications for computer-based information retrieval in school libraries; criteria for reviewing the effectiveness of computer-managed instruction; and a model for inservice training in computer literacy for teachers. A 20-item reference list for the plan and a 16-item bibliography for the inservice training model are provided.

ED289475
Hardware Selection: A Nontechnical Approach.
Kiteka, Sebastian F.
Indiana Univ., Bloomington. Vocational Education Services.
May 1987, 23p. For other guides in this series, see ED 289 473-474.
EDRS Price - MF01/PC01 plus postage.
Document Type: Classroom Material (050)
Major Descriptors: *Computer Printers; *Evaluation Criteria; *Microcomputers; *Screens (Displays)

Presented in nontechnical language, this guide suggests criteria for the selection of three computer hardware essentials—a microcomputer, a monitor, and a printer. Factors to be considered in selecting the microcomputer are identified and discussed, including what the computer is to be used for, dealer support, software availability, modem access, add-on capability, the manufacturer, competing brands, and the speed, memory, and power capabilities of the central-processing unit. Key elements to consider when choosing a monitor, which is also called a cathode-ray-tube (crt) display unit, are also explained, including number of screen pixels, number of characters per screen, maximum number of colors, bandwidth, dot pitch, convergence, phosphor persistence, and provisions for prevention of glare from the screen. Various features of the major types of printers—dot matrix, daisy wheel, thimble, thermal, ink jet, and laser—are also discussed, including quality of characters, print pitch, proportional spacing, carriage width, speed, buffer, support, and cost. The importance of defining what the computer is to be used for is emphasized, and the rapidity of new technological developments is noted. A glossary of computer terms is included as well as a list of 15 journal articles for further reading.

ED287444
Behold the Trojan Horse: Instructional vs. Productivity Computing in the Classroom.
Loop, Liza
12 Mar 1985, 12p. Paper presented at the Annual Meeting of the American Educational Research Association (Washington, DC, April 20-24, 1987).
EDRS Price - MF01/PC01 plus postage.
Document Type: Review Literature (070); Conference Paper (150)
Major Descriptors: *Administrator Role; *Computer Assisted Instruction; *Computer Oriented Programs; Computer Software; *Equal Education

This background paper for a symposium on the school of the future reviews the current instructional applications of computers in the classroom (the computer as a means or the subject of instruction), and suggests strategies that administrators might use to move toward viewing the computer as a productivity tool for students, i.e., its use for word processing, database management, and other applications. Factors favoring the use of computers as a means or object of instruction are discussed, including teacher ignorance compounded by uninformed teacher trainers, and a bias in the literature in favor of the current approaches. Steps that principals can take to encourage the extension of teacher use of productivity tools to student use of appropriate tools are suggested. Fourteen references are listed.

ED295615
Ethnographic Methods for Studying Microcomputer Implementation in Schools.
Martin, C. Dianne
Apr 1988, 31p. Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April 5-9, 1988).
EDRS Price - MF01/PC02 plus postage.

Document Type: Research Report (143); Conference Paper (150)

Major Descriptors: *Adoption (Ideas); *Computer Assisted Instruction; *Educational Innovation; *Microcomputers; *Program Implementation

This study examined the mobilization and implementation stages of introducing microcomputers into elementary and middle schools in a majority adopter (i.e., schools which began implementing microcomputers for instruction in 1983-84) school district. Data collection included structured interviews with school district staff and principals; unstructured interviews with principals, school librarians, and teachers; naturalistic observations in regular classrooms and computer laboratories; numerous informal interviews and observations with the teacher designated as a key informant for each school; content analysis of historical documents; compilation of computer usage statistics; and use of a questionnaire to measure levels of concern felt by administrators and teachers toward microcomputers. Several conflicting major themes emerged from the data: resistance to innovation; strong grassroots support for microcomputers; fear of microcomputers; high motivation to use microcomputers; the influence of early adopter school districts; and the importance of the individual in the implementation process. The data also revealed characteristics of the implementation process that contributed to and detracted from institutionalization of microcomputers by the district. It was concluded that, due to their technical nature, the potential of microcomputers to enhance the educational delivery system has not always been realized, and several factors facilitating and hindering implementation were identified. (42 references)

ED289253#

An Administrator's Manual for the Use of Microcomputers in the Schools.

Miller, Harold

1988, 169p.

Report No.: ISBN-0-13-008558-8-01

Available from: Publication Sales, Prentice-Hall, Inc., 200 Old Tappan Road, Old Tappan, NJ 07675 ($30.67 plus postage and handling).

Document not available from EDRS.

Document Type: Book (010); Non-Classroom Material (055)

Major Descriptors: *Administrator Responsibility; *Computers; *Computer Uses in Education; *Educational Administration; *Microcomputers

This book provides school administrators with the basic information they need to understand the potential of the microcomputer as an educational tool in today's schools. It covers the general operating principles for microcomputers, describes the hardware, discusses the principles of programming and the programs available, and introduces computer vocabulary. After an introductory overview, two chapters are devoted to the role of school administrators and the uses they can make of microcomputers in the school offices. Chapter 4 addresses academic and societal uses of microcomputers, while chapter 5 addresses the evaluation of educational software, on the premise that administrators must be involved in the development of instructional programs involving microcomputers. Chapters 6 and 7 explain the basic operating principles of microcomputers in simple, concise terms. Included are a brief explanation of computer language and binary mathematics, a discussion of various input and output devices, and criteria for evaluating and selecting hardware. Four specific machines are compared to illustrate application of these selection criteria. The last section includes reports on representative uses of microcomputers already found in schools across the country. Also included are summaries of the various forms of computer educational literature, some representative conference activities, and assistance available from academic and business institutions. Appended are the following: (1) a list of additional resources for computer users; (2) a discussion of important points for administrators when installing their programs; (3) specific instructions for using prepared programs and an introduction to BASIC; and (4) a short sample of a simple program.

ED296438

The Application of Computer Technology to Educational Administration—A Pilot Study.

Rees, Ruth

Queen's Univ., Kingston (Ontario). Faculty of Education.

Jun 1987, 63p. Questionnaire printed on colored paper.

EDRS Price - MF01/PC03 plus postage.

Document Type: Research Report (143); Test, Questionnaire (160)

Major Descriptors: *Administrative Change; *Computer Managed Instruction; *Computer Uses in Education; *Information Technology; *Management Information Systems

This report documents research that was carried out on a sample of Ontario secondary school principals in May 1986 to investigate the ways in which educational administrators, as planners, can use the computer. By means of a questionnaire, data were obtained to describe the current situation and the state of the art, and also to identify a future and preferred state of computer usage by Ontario educational practitioners. Questionnaires were sent to 205 secondary school principals (of whom 76 responded), randomly selected to represent each school board in Ontario. The questionaires elicited (1) background information on the principals' current use of computers; (2) information on school scheduling procedures; and (3) information on types of information needed by educational administrators that could then be part of the Management Information System. Findings identified the range of hardware and software currently in use by educational administrators, along with the reasons for using each piece of software. The reasons for not using computer technology were also solicited, and the most common response was lack of resources of all types (human, fiscal, capital and consumable, time, information, and expertise). The final section of the report provides recommendations on a systemwide basis for overcoming the reluctance to change, along with concrete suggestions for the training of educational administrators in the use of computer technology to assist them in their planning tasks. References are included, and the cover letter and questionnaire are appended.

ED291374
Computer Utilization Training in Staff Development.
Rodgers, Robert J.; Bonja, Robert P.
[Nov 1987], 20p. Paper presented at the National Conference of the National Council of States on Inservice Education (San Diego, CA, November 1987).
EDRS Price - MF01/PC01 plus postage.
Document Type: Non-Classroom Material (055); Conference Paper (150)
Major Descriptors: *Inservice Teacher Education; *Microcomputers; *Staff Development

Arguing that educators have evolved past the introductory computer literacy stage and now need an enhanced understanding of the uses of the computer as an essential tool of the trade, this paper identifies three factors that need to be considered when designing staff development programs: (1) a review of different cognitive abilities and skills required of students and how they are affected by high technology; (2) the recommendations of major educational studies and reports; and (3) the specific computer utilization skills needed to properly equip our teachers to be effective and efficient instructors. Ways in which computers can be used to improve students' critical thinking skills are considered from the perspective of Bloom's Taxonomy of Cognitive Domain, and the needs that should be met by a good computer utilization program are discussed in terms of the recommendations of the National Task Force on Educational Technology, the Holmes Group Report, and the Carnegie Report (1986). An outline of 15 skills needed in the computer age are suggested as a model to be customized according to local needs and resources, ranging from use of the computer as a tool, through various types of computer software, to classroom applications and peripheral technology. Tips for developing effective programs are also provided, as well as brief descriptions of the successful use of word processing in remedial writing classes in New Jersey. The need for ongoing support services to extend the training into actual implementation is noted, and several possible ways of providing such services are suggested. (EW)

ED291357
Characteristics of Effective Computer In-Service Programs. Research Report.
Stecher, Brian M.; Solorzano, Ronald
Educational Testing Service, Princeton, N.J.
Jul 1987, 81p.
Sponsoring Agency: National Science Foundation, Washington, D.C.
EDRS Price - MF01/PC04 plus postage.
Document Type: Research Report (143); Test, Questionnaire (160)
Major Descriptors: *Computer Literacy; *Inservice Teacher Education; *Microcomputers; *Program Effectiveness; *School Districts

Designed to describe effective computer inservice programs and to determine the components that contributed to their effectiveness, this study identified eight school districts from across the country that appeared to be providing outstanding computer training for teachers. Case studies of these eight model districts were conducted in which computer coordinators, trainers, and teachers were interviewed and inservice classes were observed. Data analysis focused on five issues: (1) outcomes of inservice classes, including the knowledge and skills acquired by teachers concerning computers, their use of computers in instruction, and the impact of computer use on students; (2) the inservice delivery systems and effective instructional practices used; (3) teacher characteristics and relationships between teacher characteristics and outcomes; (4) organizational context and context variables related to program effectiveness; and (5) unanticipated factors that helped to explain the inservice results. The text is supplemented by 7 tables, and 38 references are provided. The appendices contain copies of the interview and observation forms used in gathering the data.

ED292458
Computer-Assisted Registration and Student Statistics Reporting System.
Wilson, G. Robert
Dec 1987, 33p. Ed.D. Practicum, Nova University.
EDRS Price - MF01/PC02 plus postage.

Document Type: Practicum Paper (043)

Major Descriptors: *Community Schools; *Computer Software; *Microcomputers; *Online Systems; *School Registration

This report describes the development and evaluation of a computer-assisted, student-interactive registration program that was designed for a community school in southeastern Florida which offers courses in the curricular areas of adult basic education, GED, adult high school, business and office education, home economics, industrial education, marketing, public service, life-long learning, and education for personal improvement. The system was also designed to provide statistical information. Although the median time of 7.25 minutes for adult students to enter data into the system was significantly longer than the 5.3 minute median time for hand entry of data, the total mean registration time was reduced from 14.4 to 14.1 minutes. The shortest individual computer time was 2.35 minutes, and the longest was 25.75, with a 23.4 minute range. The reason for this broad range was a lack of keyboarding skills, especially on the part of older males in manual-skill occupations, and unemployed older females. Responses to a brief online attitude survey were overwhelmingly positive, with 97% of the students reporting that the program was easy to use, they liked it, and they thought that it should be continued. Administrative personnel were similarly positive in their evaluations. The text is supplemented by three figures and four tables, and a four-item bibliography is provided. Five appendices provide survey data and other program information.

Research

ED287446

The Motivational Effects of Types of Computer Feedback on Children's Learning and Retention of Relational Concepts.

Armour-Thomas, Eleanor; And Others

Apr 1987, 21p. Paper presented at the Annual Meeting of the American Educational Research Association (Washington, DC, April 20-24, 1987).

EDRS Price - MF01/PC01 plus postage.

Document Type: Research Report (143); Conference Paper (150)

Major Descriptors: *Computer Assisted Instruction; *Concept Teaching; *Feedback; *Intermode Differences; Motivation

The effects of different types of feedback in computer assisted instruction (CAI) on relational concept learning by young children were compared in this study. Subjects were 89 kindergarten students whose primary language was English, and whose performance on the Boehm Test of Basic Concepts was within the average range chosen from classes in a predominantly low income New York City school district. Nine relational concepts were selected for CAI over a six-week period, and three conditions of computer-generated feedback—textual, symbolic, and pictorial—were presented to the experimental groups. A control group participated in a color matching game on the computer. Motivational effects were measured by time and trials-to-criterion on the computer, and the Boehm Test of Basic Concepts was used to measure the immediate and delayed effects of CAI on the children's level of knowledge of basic relational concepts. Results indicated that, although children's performance across experimental groups was significantly better than the performance of the control group, there were no significant differences in performance among the feedback groups. These results suggest that learning within a microcomputer environment may be intrinsically stimulating for very young children. Three tables and 28 references are included.

ED296697

A Manifold Model of Computer Access and Interaction for Secondary School Males and Females.

Collis, Betty A.; And Others

Apr 1988, 98p. Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April 5-9, 1988).

EDRS Price - MF01/PC04 plus postage.

Document Type: Research Report (143); Conference Paper (150)

Major Descriptors: *Equal Education; *Mathematical Models; *Microcomputers; *Sex Differences

Based on the concept of a mathematical manifold, the model developed for this study was designed to measure and provide insights into the interaction of gender and access to computers among Canadian adolescents, as well as the multiple situational and personal variables which can constrain or facilitate computer access for the adolescent. The model was tested on data gathered by questionnaire from 2,818 Canadian 11th grade students representing urban areas in all 10 Canadian provinces. The general manifold model was adapted to predict access in three different usage categories—recreational use, nonrecreational home use, and school use—and each of these adaptations was tested on the male and female data separately. Subsequent adaptations of the model to reflect hypotheses about gender differences in access patterns were also tested with the male and female data. The full models and the male and female models provided reasonable to strong fits for the data. These results offer insights into patterns of computer use by adolescents and support the viability of the manifold model as a theoretical framework for further research. Data tables and diagrams of the models are appended. (25 references)

ED287445
Learner versus Program Control in Computer Assisted Instruction.
Kinzie, Mable B.; And Others
Apr 1987, 21p. Paper presented at the Annual Meeting of the American Educational Research Association (Washington, DC, April 20-24, 1987).
EDRS Price - MF01/PC01 plus postage.
Document Type: Research Report (143); Conference Paper (150)
Major Descriptors: *Aptitude Treatment Interaction; *Computer Assisted Instruction; *Intermode Differences; *Reading Ability; *Sex Differences; *Student Attitudes

Learner and program control of content review within computer assisted instruction (CAI) were studied to determine their effects on the posttest performance and attitudes of eighth grade students. The science-related instructional treatments were completed by 98 students who were blocked by gender and reading ability and randomly assigned to experimental treatments. It was found that students under learner control scored significantly higher on the posttest than those under program control, and males had significantly higher posttest scores than females and more favorable attitudes toward the instruction and toward computer use. A significant treatment X gender X reading ability interaction indicated that the differences in favor of learner control were due primarily to the significantly higher performance by high ability females and low ability males under learner control than under program control. Time to completion was the same for both groups of subjects. Overall results indicate that students under limited learner control adjust their study behavior to achieve greater learning in the same amount of time. Twenty-six references are listed, and statistical analyses are appended.

ED288493
Toward a Theory of Curriculum for Use in Designing Intelligent Instructional Systems.
Lesgold, Alan M.
Pittsburgh Univ., Pa. Learning Research and Development Center.
3 Aug 1987, 51p.
EDRS Price - MF01/PC03 plus postage.
Document Type: Research Report (143)
Major Descriptors: *Artificial Intelligence; *Cognitive Processes; *Computer Assisted Instruction; *Instructional Design; *Learning Theories; *Programed Tutoring

Arguing that goal knowledge is as important to intelligent machine activity as it is to human activity, and that it also must be well understood and explicitly represented in an instructional system if that system is to be successful in fostering learning, this report presents an architecture for intelligent tutors that explicitly represents curriculum or goal knowledge, as well as target (expert) knowledge and knowledge of the individual trainee's aptitude. This is seen to be a first step toward a theory of curriculum that can inform the design of such systems. The later part of the report focuses on the concept of "prerequisite," which is the basis for existing computer-assisted instruction; shows how that concept has been inadequate in the past; and introduces a new approach, in which the prerequisite relationship is always dependent on the instructional subgoal (curriculum) context. Ten figures illustrate the text and 21 references are provided.

ED296700
Use of a Microcomputer to Facilitate the Collection, Analysis and Presentation of Ethnographic Data.
Martin, C. Dianne
Apr 1988, 17p. Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April 5-9, 1988).
EDRS Price - MF01/PC01 plus postage.
Document Type: Project Description (141); Conference Paper (150)
Major Descriptors: *Computer Software; *Data Analysis; *Educational Research; *Microcomputers

This description of ways in which a microcomputer can enhance the process of conducting qualitative research uses a multiple site case study in education carried out during 1986-87 as an example (the study examined the mobilization and implementation stages of introducing microcomputers into a majority adopter school district). Specific microcomputer applications are described, i.e., the use of 512K Macintosh computer to facilitate the collection, analysis, and presentation of ethnographic interviews, naturalistic observations, historical documents, and tabular data. Software packages discussed in this context include MacWrite for word processing; FileMaker for creating databases; Multiplan to produce spreadsheets of tabular information; and MacDraw to produce graphs and illustrations for the final research project. Sample output is shown. Also discussed are the potentials of Hypercard, a new software package implementing the concept of hypertext that will enable researchers to organize qualitative data in a relational database. It is concluded that the computer proved especially valuable for tracking themes and for text arrangement, and that it allowed the researcher to collect, analyze, and present the data more efficiently. (21 references)

ED289470
An Instructional Theory for the Design of Computer-Based Simulations. IDD&E Working Paper No. 23.
Reigeluth, Charles M.; Schwartz, Ellen
Syracuse Univ., N.Y. School of Education.
Jul 1987, 26p.
EDRS Price - MF01/PC02 plus postage.
Document Type: Research Report (143)
Major Descriptors: *Computer Simulation; *Instructional Design; *Models; *Student Motivation

A simulation is described in terms of its three major aspects: the scenario, the underlying model, and the instructional overlay. The major focus of this paper is the instructional overlay as the component that serves to optimize learning and motivation. Functions of simulations are identified as the acquisition of content, the application of the content, and the assessment of learning. Five simulation features that act as vehicles for achieving these functions are then discussed: generality, example, practice, feedback, and help. A general model for the design of computer-based simulations is presented which offers prescriptions for the design of the introduction, acquisition, application, and assessment stages of simulations and for dealing with the issue of control (system or learner). Variations on the general model are then presented which are based on the nature of the behavior (procedures, process principles and causal principles), complexity of the content, form of learner participation, form of changes (physical or non-physical) and motivational requirements. In conclusion, it is noted that these prescriptions are only a first step in an attempt to construct a validated prescriptive theory for the design of computer simulations, and that considerable research and extensive field tests are needed to provide the information necessary for both confirmation and revision of the various aspects of the theory.

ED289468
The Effects of Scorekeeping on Student Motivation in a Computer-Assisted Arithmetic Drill and Practice Game. IDD&E Working Paper No. 21.
Spuches, Charles M.; Reigeluth, Charles M.
Syracuse Univ., N.Y. School of Education.
Aug 1985, 20p.
EDRS Price - MF01/PC01 plus postage.
Document Type: Research Report (143)
Major Descriptors: *Computer Games; *Elementary School Mathematics; *Student Motivation

This study investigated the effects of scorekeeping on student motivation in a computer assisted arithmetic drill and practice game. A 2x2 factorial design was used which incorporated the four treatments formed by time score (present and absent) and rank score (present and absent). Selected on the basis of their previous experience with the procedure of carrying in addition problems, the subjects were 52 second grade students who were randomly assigned to the four treatments. After a brief introduction and demonstration of the rules of the game, each student could elect to play further rounds to a maximum of 15 minutes. Motivation was measured by the number of rounds elected. An analysis of variance calculated for the number of rounds played indicated that there was no significant treatment effect. Discussion of the results and suggestions for further studies conclude the report.

ED285518
Proceedings of Selected Research Paper Presentations at the Annual Convention of the Association for Educational Communications and Technology and Sponsored by the Research and Theory Division (Atlanta, Georgia, February 25-March 1, 1987).
Simonson, Michael R., Ed.; Zvacek, Susan M., Ed.
Association for Educational Communications and Technology, Washington, D.C.
Feb 1987, 777p. For individual papers, see ED 283 505 and ED 285 519-568.
EDRS Price - MF05/PC32 plus postage.
Document Type: Conference Proceedings (021); Project Description (141)
Major Descriptors: *Computer Assisted Instruction; *Educational Media; *Educational Technology; *Instructional Design; *Instructional Effectiveness; *Media Research

Current issues in educational communications and technology are addressed in this collection of 51 papers, which are mainly research reports. The first five papers were prepared for a symposium on the status of research in instructional technology, an introduction and four discussions of divergent points of view in the current controversy over the instructional effectiveness of media. Other topics addressed by the remaining papers include research methodology, software evaluation, intelligent computer-based education systems, effects of media on learning in science and reading, interactive videodisks, instructional television, aptitude treatment interaction, instructional design and development, schema theory, locus of control, cueing and other orienting activities, problem solving, distance education, and teacher attitudes and computer equity. The names and addresses of the Association for Educational Communications and Technology Research and Theory Division officers, directors, and review board are provided, as well as cumulative author and descriptor indexes for the 1985, 1986, and 1987 editions of the proceedings.

ED295621

Proceedings of Selected Research Paper Presentations at the 1988 Convention of the Association for Educational Communications and Technology and Sponsored by the Research and Theory Division (10th, New Orleans, Louisiana, January 14-19, 1988).

Simonson, Michael R., Ed.; Frederick, Jacqueline K., Ed.

Jan 1988, 866p. For individual papers, see ED 295 622-674. For the proceedings of the 1986 and 1987 conferences, see ED 267 753 and ED 285 518.

EDRS Price - MF06/PC35 plus postage.

Document Type: Conference Proceedings (021); Research Report (143)

Major Descriptors: *Cognitive Psychology; *Computer Assisted Instruction; *Educational Technology; *Ethics; *Instructional Design; *Learning Theories

The 54 papers in this volume represent some of the most current thinking in educational communications and technology. Individual papers address the following topics: feedback in computer-assisted instruction (CAI); cognitive style and cognitive strategies in CAI; persuasive film-making; learning strategies; computer technology and children's word recognition automaticity; the development of an intelligent technical information system; CAI strategies and achievement; cooperative learning at the computer; instructional development and interactive video; locus of control and CAI; the effects of screen and text density on CAI; design of computer-based simulations; perceived credibility of female peer talent in computer instruction; academic preparation for instructional technology and competency and job success; computer animation and instructional design; instructional intervention for hearing-impaired adults; theoretical foundations of educational technology; design of CAI software for teachers without programming experience; individualizing CAI; an application of the Fishbein attitude-behavior consistency model to learning computer operation; heuristic methods applied to the design of intelligent CAI; professional ethics; cognitive psychology, cognitive processing, and instructional design; cognitive style and subliminal instruction; programming of a concept learning lesson and branching; and instructional development and teacher education. Also included are a symposium on technological equity and a proposal for a "third wave" educational system. Cumulative author and descriptor indexes for the 1985, 1986, 1987, and 1988 conference proceedings are provided.

ED296711

CAI and the High-Risk Student.

Tanner, David E.

[1987], 7p.

EDRS Price - MF01/PC01 plus postage.

Document Type: Position Paper (120); Research Report (143)

Major Descriptors: *Computer Assisted Instruction; *High Risk Students; *Individualized Instruction; *Programed Instruction; *Remedial Instruction

This study focused on the use of computer-assisted instruction with high risk students. Subjects were eleventh grade American history students who were presented the same material either by their regular instructor or by a computer sequence developed with an authoring system. Despite a statistically significant advantage for the conventionally-taught students at the time of the pretest, the group receiving computer-assisted instruction (CAI) had a statistically reliable advantage at the time the lessons concluded. It is suggested that this difference can be attributed to three factors: time factors involved in learning the lessons; the fact that students in the conventionally taught group could not make up work missed, but CAI group students could; and a Hawthorne effect whereby the improvement was due to a change in classroom regimen. Thus, it is suggested that CAI offers a potential for remedial instruction for the high risk student, but such CAI should be instructor-designed in order to maximize individualization of instruction.

Software Evaluation

ED295612

Computer Courseware Evaluations. January 1987 to December 1987, Volume VII.

Alberta Dept. of Education, Edmonton. Student Programs and Evaluation Div.

1988, 100p. For the 1986 edition, see ED 282 539.

Report No.: ISBN-0-920794-96-3

EDRS Price - MF01/PC04 plus postage.

Document Type: Evaluative Report (142)

Major Descriptors: *Computer Software Reviews; *Courseware; *Mathematics Instruction; *Microcomputers; *Problem Solving

The seventh in a series, this report reviews microcomputer software authorized by the Alberta (Canada) Department of Education from January 1987 through December 1987. This edition provides detailed evaluations of 23 authorized programs for teaching business education, mathematics, the sciences, language arts, music, problem solving, and French. Five of the programs are in French, and both English and French subject indexes are provided, as well as an index in which titles appear in the original language; evaluations are written in the language of the program. Each evaluation includes the program title; author; producer(s); address; telephone number; grade level; topics; components; hardware requirements (22 of the programs are for Apple microcomputers and one for the IBM PC/PCjr); other formats available (not evaluated); year produced; cost; subject area; and display language. Also included are objectives; descriptions and evaluations of content, instructional format, the technical system, technical characteristics, and implementational support; a summation of the evaluation; the status of the program (basic, recommended, or supplementary); and purchase information. A summary of authorized courseware from January 1983 to December 1986 and a list of other print and electronic evaluation sources are appended.

ED291338

An Evaluation Handbook for a Computer Education Program. Revised.

Billings, Karen J.

International Council for Computers in Education, Eugene, Oreg. 1985, 154p. Developed as part of doctoral dissertation, Columbia University Teacher's College.

Report No.: ISBN-0-924667-29-X

Available from: International Council for Computers in Education, University of Oregon, 1787 Agate Street, Eugene, OR 97403-1923 (1-4 copies $14.00 per copy prepaid; quantity discounts).

EDRS Price - MF01 plus postage. PC not available from EDRS.

Document Type: Non-Classroom Material (055)

Major Descriptors: *Computer Literacy; *Computer Science Education; *Evaluation Methods; *Program Effectiveness; *Program Evaluation

This handbook is designed to provide teachers and administrators at the district and school level with a set of procedures for gathering information about the major components of a computer education program and for using the information to develop conclusions and recommendations regarding the components of the program. The four major components of the computer education program are identified as: (1) goals and objectives; (2) staff development; (3) instructional materials; and (4) student achievement. The first of the handbook's three major units focuses on planning the evaluation, and offers background information on both the evaluation process and the components of a computer education program; it also describes the evaluator's task and provides guidelines for setting up the evaluation process. The second unit, gathering the information, provides step-by-step procedures for determining what information is needed, how it will be gathered, and how to use the tools provided to collected the needed data. The final unit provides assistance in summarizing the data collected and using it to develop recommendations, as well as guidelines for reporting the results to the school or the district. It is noted that the handbook's procedures and tools are specifically designed to assist practitioners in looking at the use of computers in the new content area called "computer education," which may include computer instruction integrated into the curriculum or a set of computer courses such as computer literacy, data processing, or computer applications. References are provided at the end of each of the handbook's nine sections, and a glossary is included.

ED289482

The 1987 Educational Software Preview Guide.

Educational Software Evaluation Consortium, Menlo Park, CA.

1987, 82p. Guide developed at the California TECC Software Evaluation Forum (Menlo Park, CA, December 1-5, 1986) and funded through the California Teacher Education and Computer Center (TECC) program. For previous year's guide, see ED 242 338.

Available from: Publication Sales, California State Department of Education, P.O. Box 271, Sacramento, CA 95802-0271 ($2.00).

EDRS Price - MF01 plus postage. PC not available from EDRS.

Document Type: Non-Classroom Material (055); Book-Product Review (072)

Major Descriptors: *Authoring Aids (Programing); *Courseware; *Microcomputers

Developed to help educators locate computer software programs they may want to preview for students in K-12, this guide lists commercially available programs that have been favorably reviewed by members of the Educational Software Evaluation Consortium. Programs are listed alphabetically by title within curriculum areas: art; business education (accounting/bookkeeping, economics, typing); computers (awareness, programming/science, programming languages); electronic periodicals; foreign language; health; home economics/living skills; instructional tools (authoring systems, databases, graphics generators, instructional materials generators, shell/mini-authoring systems, spelling checkers, spreadsheets, telecommunications, word processors); keyboarding; language arts/English (literature, reading, spelling, writing); library media skills; mathematics (advanced, algebra, geometry/measurement, numbers, problem solving); music; preschool/early childhood; problem solving/logic; science (astronomy, biology, chemistry, earth science, environmental education/ecology, general science, physics, scientific method/lab equipment); social science (economics, geography, government/political science, history, sociology); tests and testing; and vocational education/industrial arts. Information provided for each program includes the title, a very brief annotation, the publisher, computer equipment required, instructional mode(s), grade levels, and price. The guide also includes a list of the 27 members of the consortium; a key to the abbreviations used; an alphabetical list of titles; publisher abbreviations; and publishers' addresses.

ED295971
Estimating the Reliability of the CITAR Computer Courseware Evaluation System.
Micceri, Theodore
Sep 1987, 57p.
EDRS Price - MF01/PC03 plus postage.
Document Type: Research Report (143)
Major Descriptors: *Computer Assisted Instruction; *Courseware; *Instructional Material Evaluation; *Reliability

In today's complex computer-based teaching (CBT)/computer-assisted instruction market, flashy presentations frequently prove the most important purchasing element, while instructional design and content are secondary to form. Courseware purchasers must base decisions upon either a vendor's presentation or some published evaluator rating. Unfortunately, these are almost certain to be biased by irrelevant factors such as color graphics or presentation speed. The Center for Interactive Technologies, Applications and Research (CITAR) Computer Courseware Evaluation Model (CCCEM) emphasizes the instructional components of such courseware, rather than the "bells and whistles" of the associated technology and provides descriptive information on more than 300 courseware components. Additionally, over 200 item-level tallies are synthesized into scores that may be used to compare similar packages on their instruction, management, physical, and presentational aspects. A study of the model's consistency found, on average, that seven of eight evaluators tend to agree on items and scores and that reliabilities for key scores are near 0.70. A comparison of traditional perceptual evaluations for the same courseware produced reliabilities averaging over 0.40 less than the CCCEM model, and agreements averaging 0.20 less. The results of this study suggest that the CCCEM fills the need of courseware purchasers for an objective, generic measure. Fifteen tables are included, and the distribution of CITAR scores attained by current CBT packages and item content of scales and sub-scales are appended.

ED286471#
Only the Best: The Discriminating Software Guide for Preschool-Grade 12. 1987-88 Edition.
Neill, Shirley Boes; Neill, George W.
1987, 127p. For 1986 edition, see ED 277 361.
Available from: Education News Service, P.O. Box 1789, Carmichael, CA 95609 ($21.95 prepaid).
Document not available from EDRS.
Document Type: Non-Classroom Material (055); Book-Product Review (072); Directory (132)
Major Descriptors: *Computer Software Reviews; *Courseware; *Evaluation Criteria

Designed to aid teachers, school administrators, and parents in selecting educational software for grades K-12, this guide lists 193 programs chosen from over 6,500 evaluations conducted by 30 evaluation services in the United States and Canada. Following the introduction, which provides a detailed explanation of how the programs were selected, the guide is divided into four parts. Part I provides an alphabetical listing by title of the 146 most highly rated programs as well as a listing by subject areas, which include courseware for the arts, business education, college entrance examinations, computer education, early childhood education, foreign languages, language arts, mathematics, problem solving, science, social studies, tool programs, and typing. The description for each of these programs includes the subject area, copyright date, producer, hardware requirements, price, a brief description of the program, grade level(s), brief tips for teachers, evaluators and evaluations received, and magazine review citations. Part II lists the 47 nearly qualifying programs by subject area and includes program titles, the producer, computer system(s), price, grade level(s), and evaluators. Part III provides the names, addresses, and telephone numbers of the producers of software listed in this edition, and Part IV lists the 168 most highly rated programs from the 1986 edition. Information provided for these programs includes only the publisher, curriculum area, and computer system(s).

ED287463

International Resources for the Evaluation of Micro-Computer Hardware and Software Used in Schools.

Packer, Jeannie L.

[1987], 76p. Student project, School of Information Studies, Syracuse University.

EDRS Price - MF01/PC04 plus postage.

Document Type: Non-Classroom Material (055); Bibliography (131)

Major Descriptors: *Computer Assisted Instruction; *Courseware; *Developed Nations; *Developing Nations; *Equipment Evaluation; *Microcomputers

Developed for use by students or professionals in education and information or library science seeking national or international resources on computer-assisted instruction, this resource guide is divided into five major sections. The first section includes a glossary of acronyms as well as background information on microcomputers and computer-based education and a sample entry of the format for items in the guide. The second section includes a discussion of the benefits of microcomputer use, an outline of an inservice education program designed to help teachers become computer literate, and an extensive annotated list of readings dealing with the need for computer use in educational settings and associated issues. The selection and evaluation of hardware and software are addressed respectively, in the third and fourth sections, which include brief explanations of microcomputer and software components, basic evaluation methods for hardware and software selection, and annotated lists of readings on these two topics with an emphasis on the international setting. The fifth section provides descriptions of the school environment in industrial, newly industrial, and developing countries, together with annotated resource lists for each of the countries discussed. The examples used include the United States as an industrialized country with additional information on England and Canada; Australia and Japan as newly industrialized countries; and India as a developing country with additional materials on other developing countries. Both an annotated list of eight references and a 34-item bibliography are also provided.

ED292988

Computer Aided Drafting Packages for Secondary Education. Edition 2. PC DOS Compatible Programs. A MicroSIFT Quarterly Report.

Pollard, Jim

Northwest Regional Educational Lab., Portland, OR. Technology Program.

Mar 1988, 24p.

Sponsoring Agency: Office of Educational Research and Improvement (ED), Washington, DC.

EDRS Price - MF01/PC01 plus postage.

Document Type: Evaluative Report (142)

Major Descriptors: *Computer Oriented Programs; *Computer Software Reviews; *Computer Uses in Education; *Drafting; *Microcomputers

This report reviews eight IBM-compatible software packages that are available to secondary schools to teach computer-aided drafting (CAD). Software packages to be considered were selected following reviews of CAD periodicals, computers in education periodicals, advertisements, and recommendations of teachers. The packages were then rated by teachers on criteria that included cost of software and hardware needed to run it, ease of use, ease of set-up, and the availability of coordinated curriculum materials. The following packages are reviewed in this report: AutoCAD; CADKey 1.4E/CADKey 3.0; CADLab; CADVance; Generic CADD 3.0; Junior Drafter 1.2; and VersaCAD DESIGN Version 5.2. Information is provided on publisher, price, working with the system, ease of use, and comprehensiveness. A chart comparing features of these packages and suggestions on choosing a CAD software package are provided.

ED294564

A Guide to Evaluated Educational Software. SEED Software Annotations.

South Carolina Educational Television Network, Columbia.

Oct 1987, 171p.

EDRS Price - MF01/PC07 plus postage.

Document Type: Book-Product Review (072); Directory (132)

Major Descriptors: *Computer Software Reviews; *Courseware

Reviews of 142 education software packages are contained in this guide produced by Project SEED. Following listings of software by title, grade level, and subject area, the alphabetical list of evaluations provides information in the following areas for each program: (1) title; (2) producer; (3) copyright data; (4) grade level; (5) subject area; (6) instructional mode(s); (7) topics; (8) number of master disks, backups, and manuals; (9) other documentation; (10) backup policy; (11) preview policy; (12) availability and price of a laboratory pack; (13) availability and price of a network version; (14) series price and title; (15) licensing agreements; (16) computer used for review; (17) operating system; (18) required memory; (19) hardware supported or required; (20) content; (21) strengths; (22) weaknesses; (23) uses; and (24) recommendation.

Twelve subject areas are covered: business and vocational education; computer literacy and technology; foreign languages; health; keyboarding; language arts; mathematics; multiple subjects; problem solving; science; social studies; and vocational education. Several miscellaneous programs and utility/productivity tools are also listed, and a directory of 26 software producers is included.

ED288495
Administrative Software Evaluations for Schools.
Valesky, Thomas C.; And Others
Memphis State Univ., TN. Tennessee Administrative Software Clearinghouse.
1986, 82p.
EDRS Price - MF01/PC04 plus postage.
Document Type: Non-Classroom Material (055); Evaluative Report (142)
Major Descriptors: *Computer Software; Computer Software Reviews; *Evaluation Criteria; *School Administration

The Administrative Software Clearinghouse on the campus of Memphis State University (Tennessee) receives software designed for use in school administration from publishers and prepares a one-page evaluation to be distributed to principals in Tennessee. This booklet accumulates those evaluations for software rated as "good" or "excellent" in 15 categories. The software categories and the number of programs in each category are: Attendance (5); Business Management (6); Classroom Management (13); Database (12); Grade Reporting (2); Integrated Software (2); Library Management (3); Personnel Management (1); Property Management (4); Scheduling (5); Spreadsheet (1); Transportation (1); Utilities (5); Word Processing (15); and Other (an early childhood system) (1). Each evaluation gives the publisher's name and address; the software equipment requirements, costs, capabilities, and strengths and weaknesses; and an overall summary and rating.

ED292746
Guide for Evaluators of Social Studies Courseware. Revised.
White, Charles S.
13 Feb 1987, 8p.
EDRS Price - MF01/PC01 plus postage.
Document Type: Classroom Material (050)
Major Descriptors: *Computer Software; *Courseware; *Evaluation Evaluation Criteria; *Social Studies

In formulating a practical guide for evaluators of social studies courseware, the fundamental elements of the "Evaluator's Guide to Microcomputer-Based Instructional Packages," (MicroSIFT, 1982) were combined with an abbreviated version of the National Council for the Social Studies (NCSS) adopted curriculum-specific guidelines. The categories used in evaluating courseware include: (1) general quality of content; (2) general instructional quality; (3) general technical quality; (4) social studies knowledge; (5) social studies skill development; and (6) values in social studies. Specific criteria are delineated for each of six categories that teachers need to address in evaluating the courseware. In establishing a rating for a particular evaluative category, instructors should: (1) evaluate the total package; (2) apply the specific criteria within the category to the package; and (3) assign a rating to the category. A sample review outline is provided.

Tests/Testing

ED285893
Evaluation Approaches to Intelligent Computer-Assisted Instruction. Testing Study Group: The Impact of Advances in Artificial Intelligence on Test Development.
Baker, Eva L.
California Univ., Los Angeles. Center for the Study of Evaluation.
Nov 1986, 18p.
Sponsoring Agency: Office of Educational Research and Improvement (ED), Washington, DC.
EDRS Price - MF01/PC01 plus postage.
Document Type: Position Paper (120); General Report (140)
Major Descriptors: *Artificial Intelligence; *Computer Assisted Instruction; *Evaluation Methods; *Formative Evaluation; *Summative Evaluation

Some special problems associated with evaluating intelligent computer-assisted instruction (ICAI) programs are addressed. This paper intends to describe alternative approaches to the assessment and improvement of such applications and to provide examples of efforts undertaken and shortfalls. Issues discussed stem chiefly from the technical demands of the artificial intelligence field, which have tended to limit most evaluation efforts to first-party evaluation by project staff. ICAI evaluation should make use of a range of formative (e.g., componential analysis) and summative (e.g., cost analysis) evaluation methods with multiple criterion measures. Standardized tests have not proved sensitive enough in this area; domain-referenced tests are especially well suited to ICAI, because their success depends on experts' care in constructing detailed specifications of the knowledge domain. Individual differences in students' intelligence, cognitive styles, and state anxiety should also be considered. As evaluators sharpen their goals, they will be able to select the most relevant data to collect, and present useful instructional options. Special recommendations for ICAI evaluation include: (1) developing an expectation of evaluation; (2) rewarding evaluation participation; (3) increasing credibility of the evaluating team by encouraging expert participation; (4) adapting evaluation to specific features of ICAI development; (5) performing componential analysis of software under development; and (6) maintaining both a responsible and responsive approach.

ED286932
Computer as a Tool in SAT Preparation.
Coffin, Gregory C.
Feb 1987, 16p. Speech presented at the Annual Florida Instructional Computing Conference sponsored by the Florida Department of Education and the Florida Association of Educational Data Systems (7th, Orlando, FL, February 3, 1987).
EDRS Price - MF01/PC01 plus postage.
Document Type: Conference Paper (150); Project Description (141)
Major Descriptors: *Computer Assisted Instruction; *Instructional Effectiveness; *Low Achievement; *Test Coaching; *Test Wiseness

Two experimental programs, designed to increase Scholastic Aptitude Test (SAT) scores of inner city, low achieving students by using computer-assisted SAT preparation, produced differing results. Forty volunteers from a nearby high school were assigned to two groups of 20 each—one experimental and one control group. The first program provided six weeks of after-school work on the Hayden computerized SAT preparation program to 20 inner city high school seniors. They pretested on the SAT in November, 1985 and posttested in January, 1986. During the instructional program, supervisors recognized the subjects' frustration with the difficulty of the vocabulary and their repeated wrong answers on the computer tests, as well as their lack of motivation to attend the program. Results for the experimental groups showed that pretest to posttest mean scores dropped 22 points on verbal and rose 20 points on mathematics. The second program provided a two and one-half-week program, eliminated conflicts by scheduling during school hours, and added training on the TestSense computerized program, which teaches test-taking skills and strategies. These students' pre- and posttested on the PSAT, showing mean post-program gains of 51 points in verbal and 40 points in math. Results of the second study are encouraging for use of computers in training inner city students in test-wiseness and SAT content.

ED295950
A Comparison of the Nominal and Graded Response Models in Computerized Testing.
De Ayala, R. J.; And Others
Apr 1988, 33p. Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April 5-9, 1988).
EDRS Price - MF01/PC02 plus postage.
Document Type: Research Report (143); Conference Paper (150)
Major Descriptors: *Achievement Tests; *Aptitude Tests; *Computer Assisted Testing; *Diagnostic Tests; *Latent Trait Theory

To date, the majority of computerized adaptive testing (CAT) systems for achievement and aptitude testing have been based on the dichotomous item response models. However, current research with polychotomous model-based CATs is yielding promising results. This study extends previous work on nominal response model-based CAT (NR CAT) and compares its ability estimation as well as its overall performance to graded response model-based CAT (GR CAT). A data set of 275 examinees was used, derived from five administrations of the College Board's Achievement Test in Mathematics, Level I, at the University of Texas, Austin. Results show that both CATs had high convergence rates despite using a small item pool and had average test lengths slightly below 16 items. The NR CAT's ability estimates were highly correlated with and not significantly different from an external criterion and showed no systematic bias in estimating ability throughout the trait continuum. In contrast, the GR CAT had a tendency to underestimate high ability examinees, although its ability estimates were highly associated with the external criterion. Educational implications of the findings include the possibility of merging computer-aided instruction and diagnostic testing with CAT. Six tables and nine graphs are included.

ED286940
Computerized Adaptive Testing. ERIC Digest.
ERIC Clearinghouse on Tests, Measurement, and Evaluation, Princeton, N.J.
[1983], 4p. ERIC/TME Update Series.
Available from: ERIC Clearinghouse on Tests, Measurement, and Evaluation, Educational Testing Service, Princeton, NJ 08541-0001 (free).

EDRS Price - MF01/PC01 plus postage.
Document Type: ERIC Product (071)
Major Descriptors: *Adaptive Testing; *Computer Assisted Testing; *Item Banks; *Latent Trait Theory

This brief overview notes that an adaptive test differs from standardized achievement tests in that it does not consist of a certain set of items that are administered to a group of examinees. Instead, the test is individualized for each examinee. The items administered to the examinee are selected from a large pool of items on the basis of the correctness of the examinee's previous responses. Several steps are involved in constructing a computerized adaptive test (CAT): (1) the item pool must be developed; (2) some item characteristics must be calculated for each item; and (3) a strategy for deleting items from the item pool must be chosen, along with a scoring procedure. Latent trait theory assumes that an underlying trait is the sole determinant of an examinee's responses to test items, and that performance on an item is governed by two factors: the examinee's ability and the item's difficulty. Several item selection strategies have been developed, including the Robbins Monro procedure, fixed step size, the flexilevel method, the Bayesian approach, and the stratified-adaptive approach. Advantages of CAT are its increased efficiency, optimization of the difficulty level of the test for each examinee, and administration convenience. The most obvious constraint on the use of CAT is the problem of availability of appropriate computer hardware and software.

ED288886
A Multilevel Evaluation System Using Student-Problem Charts.
Harnisch, Delwyn L.
Apr 1987, 26p. Paper presented at the Annual Meeting of the American Educational Research Association (Washington, DC, April 20-24, 1987).
EDRS Price - MF01/PC02 plus postage.
Document Type: Conference Paper (150); Project Description (141)
Major Descriptors: *Basic Skills; *Computer Managed Instruction; *Evaluation Methods; *Student Evaluation; *Test Interpretation

A multi-purpose, multi-user evaluation system was designed to improve the quality of the reporting of information gathered in testing and evaluation practices. One part of the system, the reporting system for information resulting from a district standardized testing program, was described. The Student-Problem Package software was modified to handle special skill reporting features and labelling. Data were obtained from 5,945 students (scores on the Science Research Associates Survey of Basic Skills Test) and 303 teachers in grades K-12. With scoring keys, item response data, and school identification information, a scored vector was obtained of responses for each student. Respective skill scores were then created using test blueprints outlining the items which were used to measure each objective. Creation of the Student-Problem skill profile and the categorized individual skill profile were described, and an example of each was given. The use of overall classroom, school, and district skill proficiency summaries, which can also be generated by the system, was discussed. Four pages of references are given.

ED294918
Simple and Effective Algorithms: Computer-Adaptive Testing.
Linacre, John Michael
Apr 1988, 10p. Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April 5-9, 1988).
EDRS Price - MF01/PC01 plus postage.
Document Type: Conference Paper (150); Non-Classroom Material (055)
Major Descriptors: *Adaptive Testing; *Algorithms; *Computer Assisted Testing

Computer-adaptive testing (CAT) allows improved security, greater scoring accuracy, shorter testing periods, quicker availability of results, and reduced guessing and other undesirable test behavior. Simple approaches can be applied by the classroom teacher, or other content specialist, who possesses simple computer equipment and elementary programming skills. Building a CAT system involves techniques required for development of an item bank, selection of items, selection of the items and item order to be presented in a test, and evaluating the test for difficulty. A practical understanding of item response theory and pass-fail criteria is helpful. Although CAT tests are usually intended to determine the examinee's ability level, they can supply diagnostic information as well.

ED293885
Issues in Intelligent Computer-Assisted Instruction. Testing Study Group: The Impact of Advances in Artificial Intelligence on Test Development.
O'Neil, Harold F., Jr.; Baker, Eva L.
California Univ., Los Angeles. Center for the Study of Evaluation.
Sep 1987, 43p.
EDRS Price - MF01/PC02 plus postage.

Document Type: Review Literature (070); Evaluative Report (142)

Major Descriptors: *Artificial Intelligence; *Computer Assisted Instruction; *Expert Systems; *Test Construction

Among opportunities to advance the state of the art of intelligent computer-assisted instruction (ICAI) are the evaluation of ICAI systems and the use of the underlying technology in ICAI systems to develop tests. Each issue is addressed via its theoretical context, key constructs, appropriate references to the literature, methodological aspects, and concrete examples of the feasibility of resolving the issue. ICAI systems use artificial intelligence and cognitive science to reach a range of subject matters. Several computer programs are discussed. The key components of ICAI systems include a knowledge base, a student model, and instructional techniques for teaching declarative or procedural knowledge. Research that has contributed to the development of ICAI includes research into both formative and summative evaluation, measurement of student achievement outcomes, measurement of individual differences among students, and process measurement and analysis. A list of 75 references is presented.

ED294901

Computerized Adaptive Testing: A Good Idea Waiting for the Right Technology.

Reckase, Mark D.

Apr 1988, 19p. Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April 5-9, 1988).

EDRS Price - MF01/PC01 plus postage.

Document Type: Conference Paper (150); Evaluative Report (142)

Major Descriptors: *Adaptive Testing; *Computer Assisted Testing; *Latent Trait Theory

The requirements for adaptive testing are reviewed, and the question of why implementation has taken so long is examined. The concept of a testing procedure that selects items to match the level of performance of an examinee during the administration of a test had to wait for the technology necessary to apply the idea. Current procedures were developed based on item response theory methodology. The reliability of shorter tests and scoring has been improved by this approach. Refinement of adaptive testing procedures is one aspect currently under development; a second is a focus on better ways to model person-by-item interaction and to produce test items to measure a person's skills.

ED294911

An Evaluation of "Polyweighting" in Domain-Referenced Testing.

Sympson, J. Bradford; Haladyna, Thomas M.

Apr 1988; 32p. Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April 5-9, 1988).

EDRS Price - MF01/PC02 plus postage.

Document Type: Research Report (143); Conference Paper (150)

Major Descriptors: *Computer Software; *Scoring; *Test Reliability; *Weighted Scores

A new approach to polychotomous scoring of test items, similar to "max-alpha" scaling (MAS) and known as polyweighting, has been developed. Unlike MAS, this new method of polychotomous scoring provides scoring weights for a given item that are independent of the difficulty of other items in the analysis. Moreover, the scoring weights are bounded so that an examinee can never receive more credit for an incorrect response than for a correct response. Polyweighting assigns a score weight to each item response category that is approximately equal to the mean percentile rank of examinees who chose that category in the item calibration sample. An iterative procedure is used to derive polyweights for a set of items. In a computer program written for this process, iterations continue until the mean squared correlation ratio between items and percentile ranks stops increasing. To evaluate the effect of polyweighting on the reliability and domain validity of test scores, data from 1,100 resident physicians completing a 200-item test on otolaryngology were obtained. Results indicate that polyweighting can provide a higher level of test reliability and domain-related validity than can traditional number/proportion-correct scoring. Further research should compare the effectiveness of polyweighting with item response theory methods. Seven tables and seven graphs are presented.

SUBJECT APPLICATIONS

English as a Second Language and Foreign Languages

ED288379

Technology in the Curriculum: Foreign Language Resource Guide. A Guide to the Instructional Use of Computers and Video in Foreign Languages.

California State Dept. of Education, Sacramento.

1987, 372p.

Available from: Publications Sales, P.O. Box 271, Sacramento, CA 95802-0271 ($30.00, plus tax for California residents; includes data disk).

EDRS Price - MF01 plus postage. PC not available from EDRS.

Document Type: Teaching Guide (052); Directory (132)

Major Descriptors: *Classroom Techniques; *Computer Assisted Instruction; *Courseware; *Instructional Materials; *Second Language Instruction; *Videotape Recordings

The guide to the use of computers and video recordings in foreign language instruction was designed to assist California teachers in implementing and extending the foreign language component of the statewide curriculum. It contains: (1) an introduction on the use of the guide; (2) background on its development; (3) lists of high quality software and instructional television materials that have been mapped against state curriculum frameworks and standards for each language (French, German, Greek, Italian, Latin, Russian, and Spanish) and general reference; (4) an annotated listing of recommended instructional software and video recordings; (5) sample lesson plans that model the use of technology in the foreign language classroom; (6) appended lists of sources for the recommended technology, regional agencies, all of the titles considered for this project, foreign language resource agencies, a bibliography, and a glossary; and (7) instructions for the use of the data disk accompanying the guide.

ED285412

Product Descriptions: ESL Software for Use with High School and Adult Students. A MicroSIFT Quarterly Report.

Carrick, Bruce

Northwest Regional Educational Lab., Portland, OR. Technology Program.

May 1987, 19p.

EDRS Price - MF01/PC01 plus postage.

Document Type: Bibliography (131)

Major Descriptors: *Computer Software; *English (Second Language); *Grammar; *Reading Instruction; *Vocabulary Development; *Writing Instruction

A listing of computer software for use in high school and adult English-as-a-second-language instruction includes over 40 items, categorized for grammar, reading/writing, or vocabulary teaching, with descriptions of each. The listings include such information as the title, focus, proficiency level, components, content, comments, and brief evaluations drawn from professional journals, when available. Content page listings also include the producer's name, price, hardware requirements, and copyright date.

ED291337

Trends and Status of Computers in Schools: Use in Chapter 1 Programs and Use with Limited English Proficient Students. Staff Paper.

Congress of the U.S., Washington, D.C. Office of Technology Assessment.

13 Mar 1987, 201p.

EDRS Price - MF01/PC09 plus postage.

Document Type: Review Literature (070); Evaluative Report (142)

Major Descriptors: *Computer Assisted Instruction; *Disadvantaged; *Equal Education; *Federal Aid; *Limited English Speaking

This examination of computer use in schools provides an overview of current trends, as well as detailed analyses of the use of computers in programs for disadvantaged learners funded by Chapter 1 of the Education Consolidation and Improvement Act of 1981, and programs for students with limited English proficiency. A summary of this report and a general overview of the trends and status of computers in American education are followed by an analysis of the use of technology by Chapter 1 programs. This analysis reviews early use of technology in such programs in both public and private schools and profiles their current use of computers.

The analysis of technology use with students with limited English proficiency considers the current status of this population and describes ways in which technology (primarily the computer) is used in these programs. The implications of the findings of this study for federal policy are considered for both groups, and four areas that need attention to improve the use of educational technology are identified: (1) teacher training; (2) software development; (3) dissemination of information; and (4) evaluation and research. The text is supplemented with graphs and diagrams, and footnote citations are provided throughout the text. The primary sources of the data used are an Office of Technology Assessment (OTA) survey of Chapter 1 directors and national surveys conducted by Market Data Retrieval, Inc., Quality Education Data, Inc., and the National Survey of Instructional Uses of School Computers (Henry Becker, Johns Hopkins University).

ED295453
Teaching Popular Culture with a Computer-Assisted Instruction (CAI) Program.
del Pozo, Ivania
Apr 1986, 13p. In: **Proceedings of the Fifth Annual Eastern Michigan University Conference on Languages for Business and the Professions** (see ED 295 412).
EDRS Price - MF01/PC01 plus postage.
Document Type: Teaching Guide (052); Conference Paper (150)
Major Descriptors: *Class Activities; *Computer Assisted Instruction; *Cultural Education; *Instructional Materials; *Popular Culture

The foreign language student must experience popular culture to fully comprehend the framework in which the foreign language functions. Traditional language learning, preoccupied with words, syntax, and pronunciation, has ignored this element, leaving students unprepared to interact with individuals in the target culture. Classroom activities to teach popular culture include: teacher explanation of a custom to the class; discussion of greetings, announcements of public events, popular advertising, invitations, and newspaper headlines; culture quizzes; introduction of songs reflecting popular culture; mini-debates; using analogy and contrast to examine cognates; and readings of popular commercials and magazines. A knowledge of the popular culture helps students from our monocultural society understand why people from another society may act differently.

Keyboarding

ED289481
Keyboarding Issues in Elementary Education: Some Research Findings.
Kercher, Lydia; McClurg, Patricia
Nov 1985, 12p. Paper presented at the Annual Conference of the National Council of States on Inservice Education (10th, Denver, CO, November 22-26, 1985).
EDRS Price - MF01/PC01 plus postage.
Document Type: Review Literature (070); Research Report (143); Conference Paper (150)
Major Descriptors: *Intermode Differences; *Keyboarding (Data Entry); *Teaching Methods

This paper explores the issue of how, when, and where to teach keyboarding at the elementary school level through a review of the keyboarding literature and descriptions of three studies conducted with fifth grade students in the laboratory school at the University of Wyoming. The literature review briefly summarizes findings on the following topics: (1) when keyboarding skills can be taught; (2) whether motor proficiency affects the ability to acquire keyboarding skills; (3) whether formal keyboarding instruction improves elementary students' keyboarding skills; (4) the effect of keyboarding on student achievement in other subject areas; and (5) the students' attitudes toward learning keyboard skills. The three studies conducted at the University School are then described. The first involved observation of students learning keyboarding with a personal typing book and progressing at their own rate. The second study compared the achievement of two groups learning keyboarding using the traditional typing text and individualized instruction; one group used Apple microcomputers and the other used typewriters. The third study investigated whether students who had completed a nine-week keyboarding class would produce longer stories using a computer than students who had no formal keyboarding instruction. It was found that elementary students showed positive attitudes toward keyboarding activities, learned to keyboard through formal instruction, and showed some improvements in language arts achievement as a result of participation in keyboarding activities.

ED290451
Teacher Training for Keyboarding Instruction—Grades 4-8: A Researched and Field Tested Inservice Model.
Stoecker, John W.
[1988], 72p. Content of this material is the basis for a presentation at the National Educational Computing Conference, "NECC 88" (8th, Dallas, TX, June 15-17, 1988).
EDRS Price - MF01/PC03 plus postage.

Document Type: Non-Classroom Material (055); Research Report (143); Conference Paper (150)
Target Audience: Practitioners
Major Descriptors: *Elementary School Students; *Elementary School Teachers; *Inservice Teacher Education; *Keyboarding (Data Entry); *Microcomputers; *Typewriting

This study assessed the status of touch-typing in school districts in Oregon and Washington, and developed and field tested a comprehensive training program designed to prepare elementary teachers to teach touch-typing skills to elementary students. There were four major activities: (1) a questionnaire was developed and mailed to a random sample of 409 supervisors of elementary curriculum, of whom 217 (54%) returned the questionnaire; (2) a trainer's manual was developed for an inservice program to prepare teachers to teach touch-typing to elementary students; (3) a six-hour workshop was held for 37 teachers who had made arrangements to teach a group of students immediately following the workshop; and (4) teachers collected pre/post data from the students they taught. This report is divided into three chapters. The introductory chapter includes a rationale for the study, a statement of the problem, a brief review of the literature, and an overview of the study population and procedures. The second chapter presents detailed analyses of the data collected by the survey, as well as evaluations of the workshop content and the effectiveness of the touch-typing programs being taught by the workshop participants after two weeks of instruction. A summary of the study findings is presented in the final chapter together with the conclusions reached and recommendations for further research. Five appendices include additional data analyses, the students' pre/post skills test, and timing sheets used with students. A 71-item bibliography is attached.

Logo Programming Language

ED286715
The Teaching of Grade 7 Geometric Concepts Using LOGO.
Corbosiero, Louis J., Jr.
1986, 162p.
Available from: Mr. Louis J. Corbosiero, Jr., Pollard Middle School, 200 Harris Ave., Needham, MA 02192 (package including diskette or diskette separately, $5.00).
EDRS Price - MF01/PC07 plus postage.
Document Type: Teaching Guide (052); Computer Programs (101); Bibliography (131)
Major Descriptors: *Computer Assisted Instruction; *Geometric Concepts; *Grade 7; *Mathematics Instruction; *Programing Languages; *Secondary School Mathematics

This document provides activities that teach seventh grade geometric concepts by using the LOGO programming language. The entire package consists of the printed text and an accompanying diskette which is integral to the program. The package contains 17 lessons; all but two of the activities contain a pre-activity reading, a pre-activity written page, a computer activity, and a post-activity written page. The lessons deal with: (1) points in a coordinate plane; (2) the vocabulary of geometry; (3) angles; (4) circles; (5) bisecting segments and angles; (6) angle relationship; (7) perpendicular and parallel concepts; (8) polygons; (9) triangles; (10) quadrilaterals; (11) congruent polygons; (12) symmetry; (13) similar polygons; (14) solid figures; (15) transformations; (16) spirolaterals; and (17) a geometry review. Also included in the document is a LOGO dictionary and a LOGO bibliography.

ED287453
Development and Evaluation of the "Thinking with LOGO" Curriculum.
Missiuna, Cheryl; And Others
Calgary Board of Education (Alberta).
Jan 1987, 40p.
EDRS Price - MF01/PC02 plus postage.
Document Type: Research Report (143)
Major Descriptors: *Cognitive Development; *Curriculum Development; *Problem Solving; *Programing

This report describes a curriculum for the transfer of problem solving skills from the LOGO computer programming environment to the real world. This curriculum is being developed in the Calgary, Alberta, Canada schools for children in grades 1-6. The completed curriculum will consist of six units, one to be taught at each grade level: (1) "Orientation in Space," which introduces first grade pupils to the use of systematic search strategies as a method of exploring their world; (2) "Organization," for grade 2, which emphasizes the organization of information in order to develop a plan; (3) "Comparison," which focuses on the skill of comparative behavior for third-grade students; (4) "Analytic Perception," for grade 4, is still in progress; (5) "Inductions," for grade 5, which teaches strategies for identifying patterns and discerning relationships among objects or events; and (6) "Deduction," is still in progress, for students in grade 6. An outline of a typical lesson is provided, including the introduction, independent student activity, discussion and summary, and a statement of metacognitive strategy and generalization. A pilot project undertaken to evaluate the effectiveness of the curriculum is also described. The subjects were a total of 231 third- and fifth-grade students, who were administered a pretest to measure cognitive abilities and assigned to one of three treatment groups: (1) the "Thinking with LOGO" curriculum; (2) the traditional LOGO curriculum; and (3) a control group. Comparison of pre- and posttest scores on the verbal subtests of the Canadian Cognitive Abilities Test showed mean improvements for both of the LOGO groups in the third grade and all three groups in the fifth grade, but significant differences in the magnitude of the improvements were not obtained. Limitations of the study are discussed, and recommendations for future research are offered. A 28-item reference list is provided.

ED290461
Assessing Learning with LOGO.
Nolan, Pat; Ryba, Ken
International Council for Computers in Education, Eugene, Oreg. 1986, 88p.
Available from: International Council for Computers in Education, University of Oregon, 1787 Agate Street, Eugene, OR 97403-1923 (1-4 copies $12.50 each, prepaid).
EDRS Price - MF01 plus postage. PC not available from EDRS.
Document Type: Non-Classroom Material (055); Research Report (143)
Major Descriptors: *Cognitive Development; *Cognitive Processes; *Computer Assisted Instruction; *Models; *Programing; *Self Evaluation (Individuals)

The first is a series of booklets which present a new model for assessing and developing the thinking processes in which learners engage as they work at each Logo level, this booklet focuses on the method for assessing learning at the levels of basic Turtle commands, repeats, and procedures. It contains all the necessary materials—checklists, assessment worksheets, and activities—for developing the six main thinking processes at each of these three levels. The thinking processes to be developed are identified as coding, exploration, prediction, analysis and planning, creativity, and debugging. The methods and activities have been especially designed to highlight the role of the educator as a facilitator of learning who guides students to reflect on their own thinking as they come into contact with powerful ideas at the beginning levels of Logo. All of the ideas and methods presented here can be applied with almost any version of Logo on any type of computer. While the reading age of the items is aimed at the upper primary and junior high levels, the activities, assessment tasks, and checklists were designed to be easily adapted for use at any educational level with both child and adult learners.

ED296702
Nontrivial Pursuit: The Hidden Complexity of Elementary Logo Programming. Technical Report.
Perkins, D. N.; And Others
Educational Technology Center, Cambridge, MA.
Aug 1986, 29p.
EDRS Price - MF01/PC02 plus postage.
Document Type: Research Report (143)
Major Descriptors: *Cognitive Processes; *Difficulty Level; *Problem Solving; *Programing

The thinking processes of students of Logo were examined to identify programming problems and possible instructional remedies. Subjects were 11 students between the ages of 8 and 12 who had completed 5 weeks of Logo instruction. These students were given a series of five short programming problems highlighting such areas of difficulty as judging angles, deciding on the directions of turns, using a variable, and using a subprocedure. The data collected included notes taken by the experimenter recording program errors, attempted repairs, and code written by students. A coding system was used to provide a measure of students' successes and errors in terms of the number of elements in a program they programmed correctly and their problem-solving efforts. The success rate in terms of elements correct was high, but success in terms of programs running successfully was lower, and a number of problems with what might be considered trivial aspects of Logo were recorded. A few students evinced serious problems with understanding tasks involving variables and a subprocedure. Possible explanations for the challenge of trivial elements of programming include: (1) the conjunctivity effect of minor problems; (2) a shortfall in elementary problem-solving strategies; (3) difficulty in discriminating concepts with superficial similarity; and (4) domain and domain operation problems. It is concluded that many trivial elements of Logo pose genuine conceptual difficulties, a problem that instruction must face and resolve. (25 references)

ED287442
Research on Teaching and Learning Computer Programming Symposium.
Seidman, Robert H.
Apr 1987, 15p. Paper presented to Symposium (15.03) at the Annual Meeting of the American Educational Research Association (Washington, DC, April 20-24, 1987).
EDRS Price - MF01/PC01 plus postage.
Document Type: Position Paper (120); Research Report (143); Conference Paper (150)

Major Descriptors: *Cognitive Processes; *Computer Science Education; *Instructional Design; *Programing; *Programing Languages

Four conference papers are reviewed in this introduction to a symposium. The first paper is by Clements and Merriman, who make a case for the reflection of Steinberg's information processing componential model of cognitive processes in the LOGO language and computational environment; present a series of experiments that attempted to tailor the environment to aspects of the theoretical model and to assess transfer of componential and metacomponential skills; and speculate on how to structure an ideal LOGO environment to facilitate transfer of cognitive skills. In the second paper, Perkins, Schwartz, and Simmons report their findings from interviews with naive BASIC programmers, including their need for a mental model of the computing process, lack of good problem solving strategies, and problems in personal confidence and control. A metacourse designed to teach metacognitive skills is proposed to address these problems. Fay and Mayer, in the third paper, argue that LOGO mastery is affected by the cognitive misconceptions of naive learners, and provide a computational model of such misconceptions. In the final paper, Webb and Lewis confirm that group learning of programming has positive results and propose a metacourse to promote efficacious group behavior.

ED288487

The ECCO Logo Project: Materials for Classroom Teachers and Teacher Trainers.

Tempel, Michael; And Others

International Council for Computers in Education, Eugene, Oreg. [1985], 204p.

Report No.: ISBN-0-924667-41-9

Available from: International Council for Computers in Education, University of Oregon, 1787 Agate Street, Eugene, OR 97403 ($20.00; discounts on quantities available).

EDRS Price - MF01 plus postage. PC not available from EDRS.

Document Type: Instructional Material (051); Teaching Guide (052)

Major Descriptors: *Computer Assisted Instruction; *Language Arts; *Mathematics Instruction; *Science Instruction; *Social Studies

In the fall of 1985, the Educational Computer Consortium of Ohio (ECCO) presented an extensive series of workshops on Logo. The workshops were divided into two categories: those for teacher-trainers and those for classroom teachers. This booklet presents materials developed by a core of five participants in the workshops for trainers using Logo that could be taken directly into the classroom. These materials are presented in two major sections: Logo in Language Arts and Social Studies, and Logo in Math and Science. Activities for teacher training are included. Each section begins with materials presented by Michael Tempel of Logo Computer Systems, Inc., in a series of workshops for teacher trainers. The second part of each section contains materials used in workshops for classroom teachers, which are designed to be directly usable by students in the classroom, and include student worksheets and teacher information sheets. Listings of Apple Logo II files for teacher training and student activities are appended.

Mathematics

ED295822

Similarity: Exploring the Understanding of a Geometric Concept. Technical Report 88-15.

Chazan, Daniel

Educational Technology Center, Cambridge, MA.

Jan 1988, 127p. Some pages with small or light print and drawings may not reproduce well.

EDRS Price - MF01/PC06 plus postage.

Document Type: Research Report (143)

Major Descriptors: *Computer Assisted Instruction; *Geometric Concepts; *Geometric Constructions; *Mathematics Instruction; *Ratios (Mathematics); *Secondary School Mathematics

Previous work has identified four areas of difficulty that students seem to have with the topic of similarity: (1) understanding the definition of similarity; (2) proportional reasoning; (3) dimensional growth relationships; and (4) correspondences in right triangle similarity. This paper reports the results of an investigation into high school students' understanding of similarity. A unit addressing three of these difficulties was constructed for use with the "Geometric Supposer." Students were observed as they learned similarity with this unit and were given pretests and posttests on fractions, ratio and proportion, and similarity. From the observations and tests, clarification of these three difficulties will be sought. The resulting greater understanding of student difficulties with similarity will be of use to practitioners and of interest to the mathematics education research community. The use of technology, specifically the "Geometric Supposer," provides two benefits. First, it supports a pedagogy which seeks to attack directly the students' difficulties in understanding similarity. Second, the lab setting allows researchers as well as teachers to examine directly student thought processes in the classroom.

ED295796

Learning Style Shifts in Computer-Assisted Instructional Settings.

Clariana, Roy B.; Smith, Lana

1988, 20p. Paper presented at the Annual Meeting of the International Association for Computers in Education held in conjunction with the American Educational Research Association (New Orleans, LA, April 5-9, 1988).

EDRS Price - MF01/PC01 plus postage.

Document Type: Research Report (143); Conference Paper (150)

Major Descriptors: *Cognitive Style; *Computer Assisted Instruction; *Elementary School Mathematics; *Learning Strategies; *Mathematics Achievement; *Mathematics Instruction

This is a summary of findings of three studies of learning style in computer-assisted instructional (CAI) settings. In study one, learning style and math achievement data collected from an intact class of 23 seventh and eighth graders indicate that students' learning style preference changed after four months of CAI towards the accommodator type. Students with high math ability showed a higher pre to post learning style shift than the low ability students. In study two, learning style and math achievement data collected from a group of 22 19- to 21-year-old disadvantaged students involved in a five-week program of computer-assisted remediation showed a shift towards the accommodator type comparable to the results of study one. In study three, learning style and classroom achievement of a group of 30 adult graduate education majors in a course that deals with utilizing microcomputers in education (Apple IIe) shifted after five weeks towards a preference for more concrete experience and more reflective observation. It is suggested that a change in student learning style preference, particularly for high ability students, occurs in CAI environments. A shift towards concrete experience and active experimentation may relate to higher math achievement in similar CAI environments.

ED295785

Get into the Equation: Math and Science, Parents and Children.

College Board, New York, NY.

1987, 24p. Photographs may not reproduce well.

Available from: The College Board, Box 886, New York, NY 10023 (available only in packages of 50 for $17.50).

EDRS Price - MF01/PC01 plus postage.

Document Type: Project Description (141); Non-Classroom Material (055)

Major Descriptors: *Calculators; *Computer Assisted Instruction; *Mathematics Instruction; *Parent Participation; *Parent School Relationship; *Science Instruction

Building a partnership between school and home can be an effective way of providing for a better education for children. This booklet is concerned with educating students in mathematics and science. The booklet stresses the use of calculators and computers throughout courses from kindergarten to 12th grade, especially in mathematics and science classes. It contains sections on: (1) why minority parents are concerned; (2) what parents should know about mathematics and science classes; (3) the parent's role in monitoring homework; (4) extra activities in science and mathematics; (5) helping children prepare for tests; and (6) home projects for parents and younger children.

ED294712

Mathematical, Technical, and Pedagogical Challenges in the Graphical Representation of Functions. Final Technical Report 88-4.

Goldenberg, E. Paul; And Others

Educational Technology Center, Cambridge, MA.

Feb 1988, 124p. Drawings may not reproduce well.

EDRS Price - MF01/PC05 plus postage.

Document Type: Test, Questionnaire (160); Research Report (143)

Major Descriptors: *Computer Assisted Instruction; *Elementary School Mathematics; *Functions (Mathematics); *Graphs; *Mathematical Concepts; *Secondary School Mathematics

This report summarizes the work of a two-year project which focused primarily on the problems that students have with algebra in general, and graphs in particular. The first of two major sections in the document deals with the use of computer software to assist in the teaching of graphing. It concludes that thoughtful design and use of graphing software presents new opportunities for teaching about graphing. The next section of the report centers on the development of research instruments that are intended to study scale in the context of graphs of function. It includes a set of problem-based teaching materials that were used as research tools. The appendices contain descriptions of probes designed to see if students can interpret and create graphs of real-world phenomena, along with instruments dealing with mapping, scale, and computer explorations.

ED290627

Design Features of Pedagogically-Sound Software in Mathematics.

Haase, Howard; And Others

Massachusetts Univ., Amherst. Dept. of Physics and Astronomy.

27 Apr 1985, 16p.

EDRS Price - MF01/PC01 plus postage.
Document Type: Project Description (141); Teaching Guide (052)
Major Descriptors: *Algebra; *Computer Assisted Instruction; *Courseware; *Mathematics Instruction; *Problem Solving; *Secondary School Mathematics

Weaknesses in educational software currently available in the domain of mathematics are discussed. A technique that was used for the design and production of mathematics software aimed at improving problem-solving skills which combines sound pedagogy and innovative programming is presented. To illustrate the design portion of this technique, a "storyboard" for a sample problem from elementary algebra is presented.

ED295821

Supporting Concrete Visual Thinking in Multiplicative Reasoning: Difficulties and Opportunities. Technical Report 88-16.

Kaput, James J.
Educational Technology Center, Cambridge, MA.
Jun 1988, 17p. Drawings may not reproduce well.
EDRS Price - MF01/PC01 plus postage.
Document Type: Research Report (143)
Major Descriptors: *Basic Skills; *Computer Assisted Instruction; *Computer Oriented Programs; *Elementary School Mathematics; *Mathematics Instruction; *Multiplication

The Educational Technology Center has attempted to develop a series of computer based learning environments to support the learning and application of multiplicative reasoning. The work and software described in this paper, including the teaching experiment that generated the error phenomena examined, is part of a larger ongoing research project. This document looks closely at certain difficulties occurring when students use a concrete environment to model situations involving multiplication and division of discrete quantities. Student difficulties seem to be the result of incongruences between the students' visual experience and the semantic structure of the situation being modeled. The environments themselves and the context in which the phenomena of interest occurred are described. Then discussed are observed difficulty, theoretical underpinnings, and suggestions for a modified environment.

ED295787

Multiplicative Word Problems and Intensive Quantities: An Integrated Software Response. Technical Report 85-19.

Kaput, James J.
Educational Technology Center, Cambridge, MA.
30 Aug 1985, 81p.
EDRS Price - MF01/PC04 plus postage.
Document Type: Research Report (143)
Major Descriptors: *Computer Software; *Elementary School Mathematics; *Mathematics Instruction; *Multiplication; *Secondary School Mathematics; *Word Problems (Mathematics)

This document reports on a project that is examining some of the difficulties encountered in teaching word problems involving multiplication, division, and intensive quantities. Some of the various uses of these operations and their structures are considered. Described are discoveries and assumptions regarding students' cognitive models of these operations, especially as they pertain to intensive quantities. The report also describes the project's computer software being developed to enrich and render more flexible student cognitive models of these operations and their quantities.

ED294713

A Concrete-to-Abstract Software Ramp: Environments for Learning Multiplication, Division and Intensive Quantity. Technical Report 87-8.

Kaput, James J.; Pattison-Gordon, Laurie
Educational Technology Center, Cambridge, MA.
Sep 1987, 51p. Some drawings and charts may not reproduce well.
Sponsoring Agency: Office of Educational Research and Improvement (ED), Washington, DC.
EDRS Price - MF01/PC03 plus postage.
Document Type: Project Description (141); Research Report (143)
Major Descriptors: *Computer Assisted Instruction; *Division; *Elementary School Mathematics; *Mathematics Curriculum; *Multiplication; *Secondary School Mathematics

This document is intended to describe several software learning environments in an order that parallels a reasonable sequence of use by students. It also describes a planned an designed, but not yet implemented, extension of these environments from the discrete to the continuous case. Each of the implemented environments was developed in continuous collaboration with teachers and their students from grades three to eight. An important characteristic of these environments is their systematic linking of concrete representations, beginning with iconic representations, to more abstract representations. The report is designed to serve two functions: (1) as an overview to learning the conceptual field of multiplicative structures; and (2) as a guide to software environments. The remainder of the report is organized according to the design of the software environments. This includes descriptions of the icon-based calculation environments, the environment that introduces the numerical and graphic representations, the algebraic representations that extend these environments, the sampling environments, and finally the transitions to the continuous environment.

ED285768#

Sets, Probability and Statistics: The Mathematics of Life Insurance. Computer Program. Second Edition.

King, James M.; And Others

American Council of Life Insurance, Washington, D.C. Education and Community Services.

1985, 27p. For the publication on which this computer program is based, see ED 285 767.

Available from: American Council of Life Insurance, Company Services, 1002 Pennsylvania Avenue, NW, Washington, DC 20004-2599 ($50.00; order #C48).

Document not available from EDRS.

Document Type: Computer Programs (101); Instructional Material (051); Teaching Guide (052)

Major Descriptors: *Courseware; *Mathematics Instruction; *Probability; *Secondary School Mathematics; *Set Theory; *Statistics

The materials described here represent the conversion of a highly popular student workbook "Sets, Probability and Statistics: The Mathematics of Life Insurance" into a computer program. The program is designed to familiarize students with the concepts of sets, probability, and statistics, and to provide practice using real life examples. It also attempts to illustrate how the insurance business uses such mathematical concepts to carry out everyday business activities. The program was developed to be used in basic and advanced high school mathematics classes. The eight lessons contain activities involving: (1) sets; (2) sample spaces; (3) probability; (4) statistics; (5) mortality tables and life insurance; (6) interest; (7) figuring the insurance premium; and (8) information about the annual premium. The entire package includes a teacher's guide, four computer disks, an answer key, and a copy of the student workbook.

ED294724

Teachers' Thinking about Students' Thinking about Geometry: The Effects of New Teaching Tools. Technical Report 88-1.

Lampert, Magdalene

Educational Technology Center, Cambridge, MA.

Jan 1988, 38p.

EDRS Price - MF01/PC02 plus postage.

Document Type: Project Description (141); Research Report (143)

Major Descriptors: *College School Cooperation; *Computer Assisted Instruction; *Geometry; *Mathematics Instruction; *Secondary School Mathematics

This paper is an attempt to draw on the thinking of a group of secondary school geometry teachers who are participants in the Laboratory Sites Study of the Educational Technology Center (ETC) at Harvard University. The purpose of the Lab Sites Study is to understand the process of implementing technology-enhanced guided exploration in school classrooms. Teachers and researchers are working together to understand what it takes to use computer-based technology to support student exploration of mathematical and scientific ideas in ordinary classrooms. The data analyzed in this paper were collected as a substudy of the Lab Sites project, which looked at comprehensive questions of implementation in relation to materials produced at ETC for teaching science, mathematics, and programming. The substudy reported herein was concerned with teachers' points of view about using one piece of educational technology—The Geometric Supposer—to substantially change the way they teach geometry. The Supposer is designed to fundamentally change the way instruction is delivered in classrooms by enabling students to engage directly in the exploration of subject matter. What is reported here, therefore, is the teacher-users' thinking about that broader change in the way they do their work, as well as their thoughts about the technology.

ED289693

Descriptive Study of a Prescription Learning Basic Mathematics Skills Multi-Media Lab in an Elementary School Setting.

Lichtenheld, Peter James

May 1987, 120p. Requirements for the degree of Master of Arts, University of Texas, Austin.

EDRS Price - MF01/PC05 plus postage.

Document Type: Research Report (143); Dissertation (040)

Major Descriptors: *Computer Assisted Instruction; *Elementary School Mathematics; *Mathematics Instruction; *Teacher Attitudes

This report describes a Prescription Learning Company basic mathematics multi-media laboratory at an elementary school in Austin, Texas. Research assumptions that the Prescription Learning approach makes are explored and reviewed. A sample of 12 fifth grade students participated in attitude and achievement results of the laboratory. Twenty-four teachers also participated in an attitude study. Findings suggest that the Prescription Learning laboratory seems to have a positive effect on achievement, and both students and teachers have positive attitudes toward the laboratory. Recommendations for changes in the laboratory are presented.

ED294721#

Geometric Probability. New Topics for Secondary School Mathematics. Materials and Software.

National Council of Teachers of Mathematics, Inc., Reston, Va. 1988, 40p.

Available from: National Council of Teachers of Mathematics, 1906 Association Drive, Reston, VA 22091 ($9.00, including software).

Document not available from EDRS.

Document Type: Teaching Guide (052)

Major Descriptors: *Computer Assisted Instruction; *Geometric Concepts; *Mathematics Curriculum; *Mathematics Instruction; *Probability; *Secondary School Mathematics

These materials on geometric probability are the first unit in a course being developed by the Mathematics Department at the North Carolina School of Science and Mathematics. This course is designed to prepare high school students who have completed Algebra 2 for the variety of math courses they will encounter in college. Assuming only a knowledge of linear functions and of areas of simple geometric regions, the unit deals with how to determine probabilities of events for which the number of possible outcomes is infinite. Computer software and a user's guide have been written to accompany the unit. The software provides simulations of seven of the experiments discussed in the unit. These simulations are designed to help students understand the random nature of the experiments and appreciate the relationship between empirical and theoretical probabilities. The unit also provides an introduction to mathematical modeling, computer simulations, and the distinction between discrete and continuous phenomena.

ED287663

Computers in Mathematics Classrooms 1986-1987.

National Council of Teachers of Mathematics, Inc., Reston, Va.

Jul 1987, 566p.

Available from: National Council of Teachers of Mathematics, 1906 Association Dr., Reston, VA 22091.

EDRS Price - MF02 plus postage. PC not available from EDRS.

Document Type: Teaching Guide (052)

Major Descriptors: *Computer Uses in Education; *Elementary School Mathematics; Elementary Secondary Education; *Inservice Teacher Education; *Mathematics Instruction; *Professional Associations; *Secondary School Mathematics

This is a project of the National Council of Teachers of Mathematics (NCTM) designed to assist leaders in mathematics education who conduct in-service programs for teachers. Six conferences were held at sites across the country during the summers of 1986 and 1987. Approximately 25 different 3-member teams consisting of school and college leaders attended each 4-day conference. The teams were selected on the basis of their qualifications and experience in the use of computers to enhance mathematics instruction and on their experience and expectations to conduct in-service programs. The materials in this packet were submitted to NCTM staff members to be used throughout the conferences and to be used as a resource by conference participants when they design in-service programs following the conference. Included are: (1) reference papers for conference presentations; (2) resource papers; (3) sample materials to be used in working with groups of teachers; and (4) sample student materials.

ED288710

Computer Mathematics: An Introduction.

New York City Board of Education, Brooklyn, N.Y. Div. of Curriculum and Instruction.

1985, 314p. For part II, see ED 288 711.

Report No.: ISBN-88315-610-5

Available from: New York City Board of Education, Division of Curriculum and Instruction, 131 Livingston Street, Room 613, Brooklyn, NY 11201 ($15.00).

EDRS Price - MF01 plus postage. PC not available from EDRS.

Document Type: Teaching Guide (052)

Major Descriptors: *Computer Assisted Instruction; *Mathematics Instruction; *Problem Solving; *Programing; *Secondary School Mathematics

This document describes a mathematics course that uses the computer to solve mathematics problems. It was developed to be used with students who have completed at least one year of general mathematics or are not achieving success in the traditional mathematics program. The course is intended to review, reinforce, and extend concepts included in the secondary school mathematics curricula. The major focus of the course is on problem solving. The teaching of computer programming is intended to provide a model of a problem solving process in which a problem is broken down into its component parts. The book contains 60 lessons, some of which are laboratory sessions, which use the computer and the process of computer programming to help students understand: (1) algorithms; (2) perimeters of polygons; (3) area; (4) the order of arithmetic operations; (5) number systems; (6) consumer mathematics; (7) measurement; (8) algebraic equations; (9) simple interest; and (10) volume.

ED288711
Computer Mathematics: An Introduction. Part II.
New York City Board of Education, Brooklyn, N.Y. Div. of Curriculum and Instruction.
1986, 356p. For part I, see ED 288 710.
Report No.: ISBN-88315-655-5
Available from: New York City Board of Education, Division of Curriculum and Instruction, 131 Livingston Street, Room 613, Brooklyn, NY 11201 ($15.00).
EDRS Price - MF01 plus postage. PC not available from EDRS.
Document Type: Teaching Guide (052)
Major Descriptors: *Computer Assisted Instruction; *Mathematics Instruction; *Problem Solving; *Programing; *Secondary School Mathematics

This document describes a mathematics course that uses the computer to solve mathematics problems. It was developed to be used with students who have completed at least one year of general mathematics or are not achieving success in the traditional mathematics program. The course is intended to review, reinforce, and extend concepts included in the secondary school mathematics curricula. The major focus of the course is on problem solving. The teaching of computer programming is intended to provide a model of a problem solving process in which a problem is broken down into its component parts. The book contains 61 lessons, some of which are laboratory sessions, which use the computer and the process of computer programming to help students understand: (1) flowcharts; (2) rational numbers; (3) algebraic equations; (4) geometric principles; (5) temperature conversion; (6) number systems; (7) factoring; (8) prime numbers; (9) square root; (10) rounding; (11) the Pythagorean theorem; (12) probability; and (13) statistics.

ED289711
Consumer Mathematics, Volume One. Staff Development Program 1986-1987.
New York City Board of Education, Brooklyn, N.Y. Div. of Curriculum and Instruction.
1986, 105p. For related documents, see ED 289 712-713.
Report No.: Curric-07-6000-40; ISBN-88315-810-8
Available from: New York City Board of Education, Division Curriculum & Instruction, 131 Livingston St., Brooklyn, NY 11201 ($8.00).
EDRS Price - MF01 plus postage. PC not available from EDRS.
Document Type: Teaching Guide (052)
Major Descriptors: *Computer Assisted Instruction; *Consumer Education; *Inservice Teacher Education; *Mathematical Applications; *Mathematics Instruction; *Secondary School Mathematics

This document describes one of the second-year courses meeting the two-year mathematics high school requirement satisfying the New York Regents Action Plan. This handbook is designed to meet the needs of teachers who will be teaching the Consumer Mathematics course. The handbook, for use with staff development programs, has five main sections: (1) program scope and sequence; (2) overview of consumer mathematics course; (3) specific activities for consumers mathematics; (4) classroom management for consumer mathematics; and (5) computer applications in consumer mathematics. These sections include background information, lesson descriptions, homework assignments, worksheets, and tests.

ED289713
Consumer Mathematics, Vol. II. Computer Applications.
New York City Board of Education, Brooklyn, N.Y. Div. of Curriculum and Instruction.
1986, 409p. For related documents, see ED 289 711-712.
Report No.: ISBN-88315-693-8
Available from: New York City Board of Education, Division Curriculum & Instruction 131 Livingston St., Brooklyn, NY 11201 ($15.00).
EDRS Price - MF01 plus postage. PC not available from EDRS.
Document Type: Teaching Guide (052)
Major Descriptors: *Computer Assisted Instruction; *Consumer Education; *Mathematics Instruction; *Mathematics Skills; *Problem Solving; *Secondary School Mathematics

This document serves as Volume II of a two-part course designed to improve mathematical proficiency and understanding as the student is given practice in relevant problem-solving situations. It includes the mathematics skills needed to make sound consumer decisions. The purpose of this course is to review, reinforce and extend concepts learned in the Fundamentals of Mathematics course. The focus of this course is on solving consumer-related problems. The use of a calculator is highly encouraged to allow the student to concentrate on the concept, rather than on computation. Volume II of Consumer Mathematics contains computer applications for many of the topics contained in Volume I. The lessons involve using electronic spreadsheets and applying them to real-life situations. The electronic spreadsheets can be used for teaching problem solving as well as for the study and implementation of algorithms. Teachers may choose to integrate these lessons into the corresponding units from Volume I or they may choose to teach the lessons from Volume II after completing Volume I.

ED289744
Guidelines for Computer Mathematics I.
Texas Education Agency, Austin.
1987, 32p.
Available from: Publications Distribution Office, Texas Education Agency, 1701 North Congress Ave., Austin, TX 78701 ($1.00).
EDRS Price - MF01/PC02 plus postage.
Document Type: Teaching Guide (052)
Major Descriptors: *Computer Uses in Education; *Mathematics Curriculum; *Mathematics Instruction; *Secondary School Mathematics

This document is designed to assist teachers and administrators in Texas in the planning and implementation of the course known as Computer Mathematics I. The philosophy and intent of the course is stated, along with credit allowed, prerequisite guidelines, guidelines for teacher preparation, suggested equipment needs, sample objectives, sample activities, sample sequence of topics, evaluation information, and resource information.

ED295843
Probability: Actual Trials, Computer Simulations, and Mathematical Solutions.
Walton, Karen Doyle; Walton, J. Doyle
Mathematics Education Trust, Reston, VA.
1987, 46p.
Available from: Mathematics Education Trust, 1906 Association Drive, Reston, VA 22091 ($6.00; price includes computer simulation on diskette).
EDRS Price - MF01/PC02 plus postage.
Document Type: Teaching Guide (052)
Major Descriptors: *Computer Assisted Instruction; *Computer Simulation; *Mathematics Instruction; *Probability; *Secondary School Mathematics

The purpose of this teaching unit is to approach elementary probability problems in three ways. First, actual trials are performed and results are recorded. Second, a simple computer simulation of the problem provided on diskette and written for Apple IIe and IIc computers, is run several times. Finally, the mathematical solution of the problem is presented. Comparison of the three sets of results—actual trials, computer simulation, and mathematical solution—provides a surprising and motivating reinforcement for students. They become involved in problem solving through hands-on trials and computer simulations. The elegance of the mathematical solutions is contrasted with the awesome number-crunching ability of the computer and the "doing is believing" experience of the actual trials. The unit can be presented during consecutive mathematics or computer science classes, or individual problems can be presented alone as a diversion in a traditional curriculum. Most of the problems are appropriate for classes from seventh grade through the college level. Appendixes include: an explanation of basic probability terms; a brief history of probability; a microcomputer unit on generating random numbers; a description of the "Monte Carlo Method"; an annotated bibliography; and a list of other references.

ED290631
Function Plotters for Secondary Math Teachers. A MicroSIFT Quarterly Report.
Weaver, Dave; And Others
Northwest Regional Educational Lab., Portland, Oreg.
Aug 1987, 17p. For product descriptions, see ED 290 630.
EDRS Price - MF01/PC01 plus postage.
Document Type: Book-Product Review (072); Project Description (141)
Major Descriptors: *Computer Assisted Instruction; *Computer Graphics; *Computer Software Reviews; *Graphs; *Mathematics Instruction; *Secondary School Mathematics

This report examines mathematical graphing utilities or function plotters for use in introductory algebra classes of more advanced courses. Each product selected for inclusion in this report is able to construct the graph of a given equation on the screen and serves as a utility which may be used by the student for an open-ended exploration of a mathematical concept or by the teacher as a demonstration tool. The products are classified into one of the following types: (1) general purpose graphing utilities; (2) demonstration tools; and (3) special utility programs. In general it was felt that the positive aspects of function plotters far outweigh the negative. The ability to automate the tedious process of plotting the graph of an equation enables students to examine more equations in a shorter time. Teachers are able to spend less time sketching graphs on the overhead or blackboard. The zoom and scroll features found in many function plotters offer capabilities which cannot be duplicated manually. The report is organized into four sections including general features, algebra, coordinate geometry and trigonometry, and calculus.

ED290630

Product Descriptions: Function Plotters for Secondary Math Teachers. A MicroSIFT Quarterly Report.

Weaver, Dave; And Others

Northwest Regional Educational Lab., Portland, Oreg.

Aug 1987, 28p. For a related document, see ED 290 631.

EDRS Price - MF01/PC02 plus postage.

Document Type: Book-Product Review (072); Directory (132)

Major Descriptors: *Computer Graphics; *Computer Software Reviews; *Functions (Mathematics); *Graphs; *Mathematics Instruction; *Secondary School Mathematics

Specific programs and software resources are described in this report on function plotters to be used in secondary mathematics instruction. Products are entered in alphabetical order and the following information is provided for each package included: (1) producer; (2) hardware needed; (3) required peripherals; (4) grade level; (5) price; (6) copyright date; (7) policies; (8) objectives; (9) support materials; (10) descriptions; (11) comments; and (12) other review sources.

Programming

ED286463

Educational Computing and Cognitive Skills: Curricular Issues and Prolog Prospects.

Johanson, Roger P.

Apr 1987, 27p. Paper presented at the Annual Meeting of the American Educational Research Association (Washington, DC, April 20-24, 1987).

EDRS Price - MF01/PC02 Plus Postage.

Document Type: Review Literature (070); Position Paper (120); Conference Paper (150)

Major Descriptors: *Cognitive Development; *Instructional Effectiveness; *Programing; *Programing Languages

Following a summary and critique of the research on the use of computers in education to develop higher-order thinking skills, this paper advances eight hypotheses regarding the failure of research to confirm expected positive effects, and makes two major claims. The hypotheses are as follows: (1) a cognitive chain of consequences of programming instruction exists, and students are not progressing to the end of the chain; (2) applications represent a more likely area than programming for the desired cognitive outcomes; (3) research on cognitive outcomes of programming has been poorly conceptualized; (4) such research has been unsophisticated and done at the wrong age level; (5) the anticipation of cognitive benefits constitutes a resurrection of the discredited concept of mental discipline; (6) problem-solving, higher-order thinking, and other goals of programming instruction are discontinuous with the regular curriculum; (7) problem-solving and higher-order thinking may be domain-specific; and (8) failure to find the desired effects of programming has been due to a lack of curricular sophistication, and objectives related to such outcomes have not been inherent in experimental treatments. The first major claim is that the principal weakness of research on the cognitive consequences of programming instruction very likely has been its inadequate consideration of curriculum issues. The second claim is that a relatively new declarative programming language, Prolog, which is radically different from procedural languages like BASIC and Logo, merits serious consideration for educational use. A brief introduction to Prolog concludes the paper. A list of 44 references is included.

ED295618

Fragile Knowledge and Neglected Strategies in Novice Programmers. IR85-22.

Perkins, David; Martin, Fay

Educational Technology Center, Cambridge, MA.

Oct 1985, 35p. For a related report, see ED 295 620.

EDRS Price - MF01/PC02 Plus Postage.

Document Type: Research Report (143)

Major Descriptors: *Knowledge Level; *Problem Solving; *Programing; *Questioning Techniques; *Teaching Methods

As part of an ongoing program of research to identify the difficulties encountered by novice programmers and to develop teaching strategies to help them overcome these obstacles, researchers employed a scaffolded interview procedure with 20 high school students enrolled in the second semester of a year-long BASIC course. Investigators presented each student with a sequence of eight programming problems, ranging from easy to difficult. They asked questions to track student thinking and intervened in student difficulties with graduated levels of assistance: first, general prompts to provoke strategic thinking; second, hints, leading questions, and bits of information; and third, exact solutions to the immediate dilemma. Results showed that student difficulties stem from knowledge that is fragile in several ways, i.e., partial knowledge, inert knowledge, lack of a critical filter, misplaced knowledge, and conglomerated knowledge. Findings indicate that novice programming students might benefit from explicit teaching of strategies for controlled exploration as part of their instruction in beginning programming. Explicit teaching of strategic skills is a promising way to help students gain control of the programming process and appreciate the need for precision in understanding and using programming commands. (27 references)

ED295620
Loci of Difficulty in Learning to Program. Technical Report 86-6.
Perkins, David; And Others
Educational Technology Center, Cambridge, MA.
Jun 1986, 22p. For a related report, see ED 295 618.
EDRS Price - MF01/PC01 Plus Postage.
Document Type: Research Report (143)
Major Descriptors: *Knowledge Level; *Problem Solving; *Programing

To learn more about the specific nature of the teaching and learning problems involved, researchers conducted a clinical study of 20 high school students enrolled a BASIC course. Investigators presented each student with a sequence of eight programming problems, ranging from easy to difficult. They asked questions to track student thinking and intervened in student difficulties with graduated levels of assistance. A coding system was used to record the type of difficulty students encountered, the amount of help needed, and the correctness of solutions. Experimenters noted whether errors were omissions of a necessary element, inappropriate migrations of an element from one command to another, errors in sequencing the elements, or other mistakes. Data analysis provided information about loci of difficulty in three aspects of programming behavior: attitudes, knowledge base, and problem-solving strategies. Inadequacies in students' knowledge base about BASIC were revealed, with most errors occurring at the level of application. Findings suggest that programming instruction might place greater emphasis on encouraging students to prompt themselves with strategic questions about problematic situations, on helping them achieve more consolidated knowledge of the details of computer languages, and on addressing attitudinal and confidence factors in programming. (32 references)

Reading

ED285131
Design and Construction of Computer-Assisted Instructional Material: A Handbook for Reading/Language Arts Teachers.
Balajthy, Ernest
1987, 66p.
EDRS Price - MF01/PC03 plus postage.
Document Type: Teaching Guide (052)
Major Descriptors: *Computer Assisted Instruction; *Computer Uses in Education; *Language Arts; *Reading Instruction

Intended for reading and language arts teachers at all educational levels, this guide presents information to be used by teachers in constructing their own computer assisted educational software using the BASIC programming language and Apple computers. Part 1 provides an overview of the components of traditional tutorial and drill-and-practice computer assisted instructional (CAI) software. A history of CAI design follows, beginning with linear programs, and proceeding to branching programs, frame protocols (information frames, question frames, and prompts), and types of feedback. Sources of information for the history section and a list of commercial software are included. Part 2 outlines the basics of planning and constructing CAI software in nine steps. Step 1 involves unit plans, with substeps including choice of topic, goal statement formulation, and topic research. Lesson plans are discussed in Step 2, and the rough draft stage is dealt with in Step 3. Screen Grids, where the CAI author begins to transfer contents of the draft to the screen, are exemplified in Step 4, while Step 5 covers the program rough draft. Steps 6 through 8 focus on the program's different pages, and Step 9 shows how to finish and link the screen displays. A section describing sources of information, including software and books, follows the text. The remainder of the document consists of 14 figures and diagrams that illustrate screen design and provide sample BASIC programs.

ED291073

Automated Cloze Procedures as Research and Teaching Tools.

Cameron, C. A.; And Others

Jun 1987, 12p. Paper presented at the Annual Meeting of the Canadian Psychological Association (Vancouver, British Columbia, Canada, June 1987).

EDRS Price - MF01/PC01 plus postage.

Document Type: Research Report (143); Conference Paper (150)

Major Descriptors: *Cloze Procedure; *Computer Assisted Instruction; *Reading Achievement; *Reading Writing Relationship; *Writing Skills

In order to evaluate an experimental writing program involving word processors as tools, a study examined the use of cloze techniques as a method for indicating reading progress as it relates to writing. Subjects, 87 Canadian primary school children, were involved in a three-year longitudinal study of the effects of this experimental writing program on primary school literacy development. The students were administered cloze tests along with a variety of tests of intelligence, oral language skill, and writing ability. Results from tests given in both first and second grades indicate that cloze tests that allow as correct any word with semantic or syntactic credibility are the best predictors of writing ability. A high degree of relationship between both cloze reading and writing performance suggests the similarity of processing of these tasks. Findings also indicate that word processors ease the administration of cloze tests and are more enjoyable for students. Further findings show that Spache standards (1966), used to measure readability of cloze passages, are only roughly accurate. (A table of data and cloze tests are appended.)

ED291070

Does Computer-Assisted Instruction Enhance the Reading Readiness Achievement in Students 5.2 Years or Younger?

Garlikov, Patricia M.

Nov 1987, 17p. Paper presented at the Annual Conference of the Mid-South Educational Research Association (16th, Mobile, AL, November 11-13, 1987).

EDRS Price - MF01/PC01 plus postage.

Document Type: Conference Paper (150); Research Report (143)

Major Descriptors: *Beginning Reading; *Computer Assisted Instruction; *Kindergarten; *Reading Readiness

By exploring the kindergarten program found in two public elementary schools in a middle-class neighborhood in central Alabama, a study examined age at school entry as a critical factor in achievement in Alabama kindergartens. The sample consisted of 100 kindergarten students (53 boys/47 girls; 96 white/4 black)—77 were 63 months or older, and 23 were 62 months or younger; 67 had preschool experience, while 33 had no preschool experience. Both groups were exposed to the traditional kindergarten curriculum with computer-assisted instruction in readiness skills. The Pre-Reading Composite (Auditory Skill, Visual Skill, and Language Skill) subtest of the Metropolitan Readiness Test was used as the dependent variable; sex, age, and presence or absence of preschool experience were used as independent variables. Results indicated that the children did demonstrate differences in performance on the Auditory Skill subtest and were significantly affected by attendance at preschool. There was no significant difference in readiness achievement between older and younger children. Findings suggest that computer-assisted instruction may require caution in program material selection. (Tables giving descriptive statistics, a comparison of subtests by school and by preschool, and a comparison of age, preschool and interaction are included, and 13 references are appended.)

ED294163

Technological Advances and the Study of Reading.

Henk, William A.

12 Nov 1987, 48p.

EDRS Price - MF01/PC02 plus postage.

Document Type: Research Report (143); Review Literature (070)

Major Descriptors: *Computers; *Neurology; *Reading Difficulties; *Reading Processes; *Technological Advancement

Recent technological advances in neuroanatomy and neurophysiology have unearthed structural and functional patterns in the brain that can be associated with severe reading disabilities. As a response, this paper examines several computer-driven technologies whose capabilities shed light on brain-related issues germane to reading, with the intent of preparing reading professionals for the impact which technology may soon exert on diagnostic and instructional reading endeavors. Technologies discussed in the paper are: (1) x-ray monitoring techniques; (2) radioactive isotope imaging; (3) magnetic resonance imaging; (4) brain wave monitoring;

and (5) eye tracking. The paper assesses each technology as to cost, invasiveness, success at imaging brain tissue, provision of anatomical and functional data, and capacity to provide real time data. The paper argues that because of these new technologies, reading educators may soon engage in more productive collaborations with neuroscientists, but that not all of the answers reading educators seek are to be provided by these technologies. The paper concludes that issues such as optimum grouping procedures, classroom management, and discipline lie outside the technological realm. (Nine pages of references are attached.)

ED293097

The Effects of Computer Assisted Instruction on Reading.

Marcinkiewicz, Valerie

Apr 1988, 29p. Master's Thesis, Kean College. Some pages may not reproduce well.

EDRS Price - MF01/PC02 plus postage.

Document Type: Thesis (042); Research Report (143)

Major Descriptors: *Computer Assisted Instruction; *Reading Instruction; *Remedial Instruction

To provide more information on whether computer assisted instruction (CAI) is an effective means of reading remediation, a study examined two ninth grade classes (15 students per class) to determine what differences, if any, existed after remediation of the experimental sample's deficiencies with CAI. The classes were primarily Black, with four Hispanic students and one Vietnamese student, from an urban-suburban community. Both the control and experimental samples were pretested with the High School Proficiency Test (HSPT). The control sample received direct instruction in a classroom setting for five 43-minute periods per week, while the experimental samples received three 43-minute periods of direct instruction plus CAI for two 43-minute periods per week. Results from a posttest indicated that the experimental sample showed no significant difference when contrasted with the control sample, and that the control group showed a mean gain of two points over the experimental sample. (Two tables listing the mean, standard deviation, and t of the pretests and posttests for the experimental and control groups are included, and tables of the pretest and posttest results of the two groups, a skills array of HSPT reading specifications, and 26 references are appended.)

ED292059

Speech Recognition Technology: An Application to Beginning Reading Instruction. Technical Report.

Thompson, Charles L.; And Others

Educational Technology Center, Cambridge, MA.

Oct 1985, 45p.

EDRS Price - MF01/PC02 plus postage.

Document Type: Research Report (143)

Major Descriptors: *Computer Assisted Instruction; *Reading Instruction; *Reading Programs; *Technological Advancement

Noting that the recent development of reliable, high-performance, low-cost speech recognizers—devices that can distinguish among spoken words—holds potential for education, such as early reading instruction, this technical report describes a study which investigated two principal questions: (1) Does an inexpensive, microcomputer-based speech recognizer perform reliably enough on young children's speech to permit application to reading instruction?; and (2) What are the main human factors attending such use? The Dragon System Mark II Isolated Word Speech Recognizer was used in the study, which included four stages. The first phase took place in June 1984 and involved 17 kindergartners; the second phase took place in November 1984 and involved 7 kindergartners and 8 first graders; the third phase took place in late December and involved 10 kindergartners; and the fourth phase took place in August 1985 and involved 6 students who had completed kindergarten and were about to enter first grade. The results of the study indicated that speech recognition technology holds potential for such educational applications as beginning reading instruction. Findings also suggest that human factors, such as microphone handling, responses to recognition errors, responses to prompts and remarks, and need for adult supervision are crucial ingredients in the effective application of speech recognition technology in education. (Seven tables of data are included and a short bibliography is attached.)

Science

ED292652

The Effects of Microcomputer-Based Laboratory Exercises on the Acquisition of Line Graph Construction and Interpretation Skills by High School Biology Students.

Adams, D. Daryl; Shrum, John W.

1988, 35p. Paper presented at the Annual Meeting of the National Association for Research in Science Teaching (61st, Lake of the Ozarks, MO, April 10-13, 1988).

EDRS Price - MF01/PC02 plus postage.

Document Type: Research Report (143); Conference Paper (150)

Major Descriptors: *Biology; *Computer Assisted Instruction; *Computer Graphics; *Microcomputers; *Science Laboratories; *Secondary School Science

Effects of microcomputer-based laboratory (MBL) exercises and level of cognitive development on high school biology students' ability to construct and interpret line graphs were investigated. Forty-six students enrolled in general biology classes at a rural high school volunteered to participate in the study. These students were administered instruments to assess the level of cognitive development and line graphing ability. Twenty students were chosen to participate in the study. Experimental students experienced four laboratory exercises that used a microcomputer to gather, display, and graph experimental data. Contrast students experienced the same four laboratory exercises using conventional laboratory equipment and produced line graphs by hand. Effects due to instructional method were found on the assessment of the students'graph construction and interpretation abilities. Students experiencing MBL exercises outperformed the contrast students on graph interpretation tasks. Students experiencing conventional laboratory exercises outperformed the experimental students on graph construction tasks. Effects due to cognitive development were indicated, with those students classified as high cognitive development outscoring those classified as low. Interview data revealed that students applied prior knowledge and experience to the conditions presented by the graph and were led to erroneous conclusions about what the graph actually represented. The students also reached improper conclusions about the interpretation of graphs when they improperly scaled axes.

ED292655

A Model for Implementing Microcomputers in Science Teaching.

Ellis, James D.; Kuerbis, Paul J.

1988, 51p. Paper presented at the Annual Meeting of the National Association for Research in Science Teaching (61st, Lake of the Ozarks, MO, April 10-13, 1988).

EDRS Price - MF01/PC03 plus postage.

Document Type: Research Report (143); Conference Paper (150); Test, Questionnaire (160)

Major Descriptors: *Computer Assisted Instruction; *Computer Uses in Education; *Microcomputers; *Science Instruction; *Science Teachers; *Secondary School Science

The Biological Sciences Curriculum Study (BSCS), with support from the National Science Foundation, is conducting a three-year project to develop a model for implementing educational computing in school science. This paper explains the tentative model in detail and presents the results of a pilot test of the model, which project staff conducted during the first year of the project. The goals for the project are: (1) to develop and test a model of implementing educational computing in school science; (2) to train 260 science teachers and administrators in the Pikes Peak region of Colorado to use microcomputers to enhance science learning and teaching; (3) to establish a network in the Pikes Peak region to implement educational computing in school science; and (4) to disseminate a model of implementation for educational computing in school science. The project met its first year objectives and was successful at increasing science teachers' use of microcomputers. Project staff defined and measured implementation according to the Concerns Based Adoption Model (CBAM). Results from pre- and posttests using the Stages of Concern Questionnaire from CBAM indicated that the participants changed from a profile typical of non-users of an innovation toward one typical of users. Project staff developed an Innovation Configuration checklist to describe participants' use of microcomputers. Most of the participants were using microcomputers in several ways by the end of the year. Appendixes include the Microcomputer Use in Science Teaching checklist and the Stages of Concern Questionnaire. A 41-item reference list is also provided.

ED287732

Encourage Literacy of Science Teachers in the Use of Microcomputers (ENLIST Micros). Final Report.

Ellis, James D.; Kuerbis, Paul J.

Biological Sciences Curriculum Study, Boulder, Colo.

Aug 1987, 119p.

EDRS Price - MF01/PC05 plus postage.

Document Type: Research Report (143); Test, Questionnaire (160)

Major Descriptors: *Computer Assisted Instruction; *Computer Literacy; *Elementary School Science; *Science Instruction; *Science Teachers; *Secondary School Science

This document represents the final report of a project which was designed to improve the quality and quantity of microcomputer use in science teaching. The five major goals of the project were met, and 22 essential competencies for computer literacy among science teachers were identified. The model and materials developed tended to be successful in improving the skills, knowledge, and attitudes of science teachers. Results of the project were disseminated by workshops, papers at professional meetings, publicity releases, and published articles. The materials developed and summarized in this document include: (1) a teacher enhancement model that applies to implementing any educational innovation; (2) a definition of what it means to be a computer-literate science teacher; (3) strategies for implementing educational computing; (4) materials and approaches that continue in use without outside support; and (5) a determination of the appropriate use of microcomputers in teaching science. Appendixes, which make up two-thirds of the document, include lists of contributors to ENLIST Micros, evaluation instruments, materials pertaining to the dissemination activities, and responses to the use survey conducted as part of the study.

ED291597

Facilitating Collegial Exchange among Science Teachers: An Experiment in Computer-Based Conferencing. Technical Report 86-14.

Katz, Mary Maxwell; And Others

Educational Technology Center, Cambridge, MA.

Jan 1987, 120p.

EDRS Price - MF01/PC05 plus postage.

Document Type: Research Report (143)

Major Descriptors: *Behavioral Science Research; *Computer Networks; *Computer Software; *Computer Uses in Education; *Science Teachers

Teacher isolation is a significant problem in the science teaching profession. Traditional inservice solutions are often plagued by logistical difficulties or occur too infrequently to build ongoing teacher networks. Educational Technology Center (ETC) researchers reasoned that computer-based conferencing might promote collegial exchange among science teachers by giving them a new way to communicate with each other—individually or in groups, from their own workplaces and homes, at whatever time suits them. Using "Common Ground" conferencing software created at ETC, these researchers established an electronic network and conducted two initial studies of its operation. Researchers studied both technical and substantive aspects of the network's operation. Initial feedback from teachers was quite positive, and data on their usage patterns yield several findings: (1) some participants need support and encouragement in the initial stages of learning to use a conferencing system; (2) some participants encountered snags in setting up their own equipment or using their communications software; (3) access to equipment remains a problem for some school people; (4) inexperienced participants tend to send more private than public messages; and (5) forum moderators and/or a network coordinator can play an important role in stimulating and sustaining substantive discussions. Half of the document consists of appendices. They include magazine articles, case studies of teachers' use and evaluation of the network, sample telephone interviews, and sample network messages.

ED291600

A Model Program in Science, Mathematics, and Technology. Final Report TP87-9.

McDowell, Ceasar; And Others

Educational Technology Center, Cambridge, MA.

Oct 1987, 42p. Drawings may not reproduce well.

EDRS Price - MF01/PC02 plus postage.

Document Type: Project Description (141)

Major Descriptors: *Computer Uses in Education; *Educational Cooperation; *Science and Society; *Secondary School Mathematics; *Secondary School Science; *Technological Literacy

Over the past 5 years parents, industry leaders, and policy makers have called repeatedly for the improvement of mathematics and science education in urban schools and for measures to insure that all students are "technologically literate." Various efforts at the national, state, and local levels have emerged in response to these calls, with projects ranging from software development to teacher training and from student skill development to business, school, and university partnerships. This report is a description of a collaborative project. One of the primary goals of the report is to share the experience of this project in a manner that will both guide and inform colleagues. The report has been organized along the four themes of the project: (1) the use of new technologies for mathematics, science, and computing education; (2) student motivation and achievement training; (3) school leadership and team building; and (4) building a collaborative process to facilitate school improvement. Each section provides a detailed account of the entire process, from conceptualization to implementation. A brief history of the collaborating institutions, and an overview of the project's goals and objectives precede the discussion of the four major themes of this project.

ED289705#

Farm & Food Bytes: Soil and Water Conservation. Teacher's Guide and Student Study Manual.

Patterson, Jo

1986, 68p. This publication was written with the support of an educational grant from Pioneer Hi-Bred International, Inc.

Available from: Soil and Water Conservation Society, 7515 NE Ankeny Rd., Ankeny, IA 50021 ($29.00 plus shipping and handling; includes a two-sided diskette).

Document not available from EDRS.

Document Type: Teaching Guide (052); Instructional Material (051); Computer Programs (101)

Major Descriptors: *Courseware; *Elementary School Mathematics; *Elementary School Science; *Soil Conservation; *Water

This kit includes a variety of instructional materials designed to teach language arts, science, mathematics and social studies while integrating soil and water conservation concepts into the intermediate-level classroom. The activities included in the student study manual are intended to be used to: (1) introduce a topic prior to using the courseware provided in the kit; (2) involve students in specific activities while utilizing the computer; and (3) provide a comprehensive review of the topic after the courseware has been used. Each student activity has a corresponding instructional plan which is provided in the teacher's guide, consisting of specific objectives, suggested activities, and teaching strategies. A third section of the kit provides guidelines for the use of the instructional courseware which can be purchased with this kit. Also included are brochures about the kit and a poster which addresses conservation and the water cycle.

ED289699

Ideas for Integrating the Microcomputer into Science Instruction.

Pollard, Jim, Ed.

Northwest Regional Educational Lab., Portland, OR. Computer Technology Program.

Nov 1987, 31p.

EDRS Price - MF01/PC02 plus postage.

Document Type: Teaching Guide (052); Computer Programs (101)

Major Descriptors: *Computer Assisted Instruction; *Courseware; *Measurement; *Science Activities; Science Education; *Science Experiments; *Secondary School Science

Much of the innovation in the use of microcomputers in education has come from classroom teachers who are using computers with students. In October, 1987, forums were held for secondary school science teachers who were using computers in their science classes. Within this document are some of the lesson plans that the participating teachers brought to the sessions. The lessons outlined in the booklet include computer applications for: (1) physical science laboratories; (2) stratigraphy; (3) teaching about significant digits; (4) weather forecasting; (5) chemical reaction synthesis; (6) creating a database about tides; (7) science laboratory tools which measure heat, light, and temperature; and (8) a teacher-made program dealing with laboratory calculations. The descriptions contain the name and address of the contributor, the target audience of the lesson, the hardware and software needed, and a brief statement about the purpose and objectives of the lesson. Some of the lessons also include a listing of the computer courseware and some sample student worksheets.

ED291599

Promoting 6th Graders' Understanding of Density: A Computer Modeling Approach. Technical Report 86-5.

Smith, Carol; And Others

Educational Technology Center, Cambridge, MA.

Jul 1986, 123p. Contains some broken type which may not reproduce well.

EDRS Price - MF01/PC05 plus postage.

Document Type: Research Report (143); Test, Questionnaire (160)

Major Descriptors: *Cognitive Development; *Computer Assisted Instruction; *Computer Software; *Elementary School Science; *Physical Sciences

The concept of the density of a material has an important role in elementary and secondary school science curricula, but it is a difficult concept to grasp. This project explores why this should be and whether there are some simpler, more accessible notions which can serve as the basis for building a concept of density in students' minds during the later elementary school years. The study explores the effectiveness of using computer models to help students build an understanding of density. This teaching strategy proved to be moderately successful with sixth graders. It was found that the majority of students did correctly assimilate this model in a way that supported their understanding of density as an intensive quantity and that they were able to articulate some relevant differences between weight and density. It was found that this distinction was necessary for children to have success at ordering by relative densities and in understanding a phenomenon such as sinking and floating. Appendices supply a description of the computer programs, worksheets, lesson plans, and interview instruments.

ED291598

Teaching for Conceptual Change Using a Computer-Based Modeling Approach: The Case of Weight/Density Differentiation. Technical Report 87-11.

Smith, Carol; And Others

Educational Technology Center, Cambridge, MA.

Nov 1987, 151p. Drawings may not reproduce well.

EDRS Price - MF01/PC07 plus postage.

Document Type: Research Report (143)

Major Descriptors: *Computer Assisted Instruction; *Computer Simulation; *Elementary School Science; *Middle Schools; *Physical Sciences

Because density is unobservable and must be inferred from knowledge about weight and size, it is a difficult concept to teach and learn. Even after traditional instruction, many students still have an undifferentiated concept that mixes characteristics of both weight and density. In this study, researchers tested the effectiveness of a unit they created to help students make this difficult conceptual differentiation, which is crucial to understanding the particulate nature of matter. The Educational Technology Center's Weight/Density Unit uses both computer simulations and classroom activities with real materials of different weights, sizes, and densities. The simulations attempt to make density more visually accessible than it is with real objects. Researchers used the unit in one sixth-grade and one seventh-grade class. The findings suggest that providing conceptual change is both difficult and possible, and they further suggest that computer models, used in combination with hands-on materials can help students to understand an abstract and perceptually inaccessible concept such as density. Evidence from the pre- and posttest and the clinical interviews suggests that the teaching intervention brought about two kinds of change: (1) conceptual differentiation among students who initially made none; and (2) conceptual consolidation in which students who already had a beginning, fragile distinction deepened and extended their understanding. Appendixes make up the bulk of the volume. They include samples of the assessment instruments; teaching materials for three units, with worksheets; and a discussion of the computer programs.

ED291595

Weight, Density and Matter: A Study of Elementary Children's Reasoning about Density with Concrete Materials and Computer Analogs. Technical Report 85-15.

Smith, Carol

Educational Technology Center, Cambridge, MA.

Jun 1985, 76p. Drawings may not reproduce well.

EDRS Price - MF01/PC04 plus postage.

Document Type: Research Report (143)

Major Descriptors: *Computer Simulation; *Computer Uses in Education; *Elementary School Science; *Physical Sciences

Density is the first intensive physical quantity students encounter that can be understood in terms of an underlying model, the particulate theory of matter. Learning about density provides students with explanations for a range of phenomena such as sinking and floating, and changes of state. Teachers report, however, that density is a difficult concept for students to grasp. Researchers conducted pilot studies to determine whether students can understand a visual analog of density presented in computer graphics more easily than they can understand the concept of density inferred from manipulation of real world materials. Second-, fourth-, and sixth-grade students received two sets of parallel tasks: one involved manipulation or real materials and the other involved shapes presented in a computer display. Findings indicate that experience with computer models can help students to think about the difference between steel and aluminum cylinders as an intensive one—that is, stemming from the kind, not the amount of the material. Younger children, however, need help to see the computer analog as a "model" of density.

ED295832

The Truth, but Not the Whole Truth: An Essay on Building a Conceptually Enhanced Computer Simulation for Science Teaching. Draft Article. Technical Report 88-18.

Snir, Joseph; And Others

Educational Technology Center, Cambridge, MA.

Jun 1988, 31p. Drawings may not reproduce well.

EDRS Price - MF01/PC02 plus postage.

Document Type: Position Paper (120); Project Description (141)

Major Descriptors: *Computer Simulation; *Computer Uses in Education; *Concept Formation; *Educational Innovation; *Educational Objectives; *Secondary School Science

Many feel that an advantage to using computer simulations in science teaching is that they give students the opportunity to witness or perform experiments which might otherwise be too expensive, time consuming, or dangerous for them to do. Simulations attempt to mimic the kind of experience students get in a laboratory and help students learn new facts. It is held that simply providing students with laboratory experience does not help them to understand the ideas of scientists. This paper urges researchers, educators and software designers to consider how computer simulations can be used to bring about conceptual change and understanding. The purpose of this paper is to provide a rationale for designing conceptually enhanced simulations and describe their underlying structure. Part one discusses natural phenomena and defines the problem. Part two discusses model systems and identifies the kinds that may play a role in helping students understand the theoretical frameworks of scientists. The third part shows how these ideas were applied in developing a simulation to teach the concepts of weight and density. Twenty-five references are listed.

ED289743

Making Sense of the Future. A Position Paper on the Role of Technology in Science, Mathematics, and Computing Education.

Wilson, Beth, Ed.

Educational Technology Center, Cambridge, MA.

Jan 1988, 32p. Photographs may not reproduce well.

Available from: Publications, Educational Technology Center, 337 Gutman Library, Appian Way, Cambridge, MA 02138.

EDRS Price - MF01/PC02 plus postage.

Document Type: Project Description (141)

Major Descriptors: *Computer Science Education; *Computer Uses in Education; *Elementary School Mathematics; *Elementary School Science; *Instructional Innovation

Since 1983, the Educational Technology Center at the Harvard Graduate School of Education has studied the uses of computers and other technologies to improve K-12 instruction in science, mathematics, and computing. Collaborative research groups—including scientists and mathematicians, practicing teachers, learning theorists, and software designers—have focused on "targets of difficulty," or curricular topics that are both crucial to students' further progress in these fields and widely recognized as difficult to teach and learn. More than 15 research projects have been completed to study the nature of students' difficulties, clarify the educational advantages that computer technology offers, and design experimental lessons that use computers as well as traditional materials to address these difficult topics. Three research groups tried promising teaching units in five Massachusetts high schools to learn about their use in regular classrooms and schools. This monograph summarizes the results of the Educational Technology Center's work and their implications for policy makers, school practitioners, and others concerned about science and mathematics education. The findings of the research project fall into three categories: (1) teaching and learning; (2) technology; and (3) implementation.

ED291596

The Differentiation of Heat and Temperature: An Evaluation of the Effect of Microcomputer Teaching on Students' Misconceptions. Technical Report 87-5.

Wiser, Marianne

Educational Technology Center, Cambridge, MA.

Dec 1986, 173p. Drawings may not reproduce well.

EDRS Price - MF01/PC07 plus postage.

Document Type: Research Report (143)

Major Descriptors: *Computer Assisted Instruction; *Computer Simulation; *Heat; *Misconceptions; *Physical Sciences; *Secondary School Science

Two classroom studies, one conducted in the spring of 1985 and the second in the spring of 1986, showed that many high school students do not differentiate between heat and temperature; instead, they have a single concept that contains some of the features of heat and some of the features of temperature. Because the distinction between these two phenomena is essential to an understanding of other thermal phenomena in both physical and biological systems, researchers developed Microcomputer-Based Laboratories (MBL) to facilitate students' differentiation of heat and temperature. Lessons focusing on the quantitative relationships between the amount of heat, mass and temperature change, heat storage capacity, cooling curves, and latent heat were developed in two formats, computer-based and traditional. In the computer-based lessons, students use the computer as a laboratory tool to record heat and temperature data and to display them as graphs and tables. Results indicate that the MBL can help students understand more clearly the quantification of heat and distinguish between heat and temperature. The MBL allows students to collect data more quickly and with greater precision, and it frees them from performing calculations and drawing graphs. Students need plenty of time to experiment with and discuss thermal phenomena. Lesson plans are included for the topics of: (1) heat and temperature; (2) heat storage capacity; and (3) latent heat. Eighteen tables analyze the results of interviews and tests. Tests and interviews from both the 1985 and 1986 studies are presented in 17 appendices.

Social Studies

ED285802

Here's a Brainstorm: Testing and Evaluation in Social Studies. A Resource Packet.

ERIC Clearinghouse for Social Studies/Social Science Education, Bloomington, IN.

1987, 15p.

Available from: ERIC Clearinghouse for Social Studies/Social Science Education, Smith Research Center, Suite 120, 2805 East Tenth Street, Bloomington, IN 47405.

EDRS Price - MF01/PC01 plus postage.

Document Type: ERIC Product (071); Teaching Guide (052); General Reference (130)

Major Descriptors: *Courseware; *Social Studies; *Teacher Made Tests; *Test Construction; *Test Items

Appropriate evaluation can greatly enhance the teaching process, and this resource packet is designed to help make testing more efficient. Tests and test items are featured in these listings, and information on test construction is provided. The various sources which are highlighted include: (1) professional organizations; (2) journals and newsletters; (3) RIE (**Resources in Education**); (4) CIJE (**Current Index to Journals in Education**); (5) textbooks; and (6) classroom aids for teaching how to take tests and computer software for test making.

ED292694

Computer Use and the Social Studies.

Ediger, Marlow

1987, 23p.

EDRS Price - MF01/PC01 plus postage.

Document Type: Position Paper (120)

Major Descriptors: *Computer Assisted Instruction; *Computer Managed Instruction; *Computer Uses in Education; *Social Studies

Computers frequently are not utilized adequately or optimally in classrooms. However, selected principles of learning are applicable to computer and software usage. They include: (1) meaningful and achievable exercises; (2) sequential learning; and (3) purposeful content. Learner interest, motivation, and balance among objectives are significant considerations in computer instruction. The types of software selected for student use should reflect definite social studies goals, and diverse kinds of software programs, based on established objectives, need to be utilized in ongoing lessons and units. Those programs include: (1) drill and practice; (2) tutorials; (3) diagnosis and remediation; (4) simulations; and (5) games. Different types of educational philosophies, such as experimentalism, idealism, realism, and existentialism, may be used in computerized classroom settings. Computers can be successfully used with both a behavioristic approach, stressing a logical, sequenced curriculum, or a humanistic approach, emphasizing student-teacher planning and an open curriculum.

ED292689

Computers: The New Classroom Aid.

Killoran, James, Ed.; And Others

Association of Teachers of Social Studies, New York, N.Y.; United Federation of Teachers, New York, N.Y.

ATSS/UFT Journal, v43 n1 Spr 1987, 67p.

Available from: **ATSS/UFT Journal**, United Federation of Teachers, 260 Park Avenue South, New York, NY 10010.

EDRS Price - MF01/PC03 plus postage.

Document Type: Serial (022); Non-Classroom Material (055)

Major Descriptors: *Classrooms; *Computers; *Computer Uses in Education; *Social Studies

The articles in this journal issue describe various aspects of the computer revolution's impact on social studies teaching. The first two articles address the theoretical background of computer implementation in social studies classrooms. Robert Consigli and Mark Jarrett describe how the computer should be used in "The Social Studies Revolution and the Computer Revolution," while Charles White compares social studies education and instructional computer technology in "Computers in Social Studies: An Overview." Four articles discuss specific computer classroom applications. Hazel Greenberg, in "What's Next for 'Next Step,'" describes word processing projects, and Frank Melia explains developing writing skills in "Writing in a Social Studies Computer Lab." In "Using a Database to Investigate the Presidency: Meet the Presidents," Michael Yaeger describes a "presidential research project," while James Killoran reports on a learning activity using a spreadsheet program, in "What If ...?" Two articles provide ideas for non-teaching computer applications. Richard Germundsen illustrates how teachers might reduce record-keeping tasks in "Could a Computerized Gradebook System Help You?" and Patricia Hanham tells how paperwork can be facilitated in "Using the Computer for Classroom Management."

ED296950

Computers in Social Studies Classrooms: ERIC Digest EDO-SO88-5.

White, Charles S.

ERIC Clearinghouse for Social Studies/Social Science Education, Bloomington, IN.

Jun 1988, 4p.

Available from: ERIC Clearinghouse for Social Studies/Social Science Education, Indiana University, 2805 East Tenth St., Suite 120, Bloomington, IN 47408.

EDRS Price - MF01/PC01 plus postage.

Document Type: ERIC Product (071)

Major Descriptors: *Computer Assisted Instruction; *Social Studies

Integrating computer-based learning tools into the curriculum has been slow, and the results of actual usage have been inconclusive; however, the potential for effective instruction should increase use by teachers and students. This ERIC Digest discusses three topics: (1) computer use in the classroom; (2) what is known about the effects of computer use on teaching and learning; and (3) trends likely to develop in the use of computers. Discussion of computer software includes drills, tutorials, simulations, and databases as the most commonly used programs in classrooms. Research results of computer use are presented in terms of the effects of drills and tutorials, simulations, and databases. Five projected trends include these beliefs: (1) computers will become standard fixtures because they have proven to be useful tools; (2) the national movement towards the development of thinking skills will be supported by the use of databases; (3) software development will increase as demands are made for curriculum integration; (4) there will be increased development of interactive videos; and (5) access to data will increase through the use of modems, CD-ROM discs, and hypermedia systems. A 14-item list of references and Educational Resources Information Center (ERIC) resources is included.

Vocational Education

ED289016

The Development of Instructional Materials for Vocational Personnel Serving Students Who Are Speakers of Other Languages and Have Limited English Proficiency. Final Report.

Adamsky, Richard A.; And Others

Temple Univ., Philadelphia, PA. Dept. of Vocational Education.

30 Jun 1987, 173p. For information on the accompanying audiotapes, contact Dr. Dolores Miller, RH-359, Ritter Hall, Dept. of Vocational Education, Temple University, Philadelphia, PA 19122.

EDRS Price - MF01/PC07 plus postage.

Document Type: Research Guide (143); Teaching Guide (052)

Major Descriptors: *Korean; *Microcomputers; *Microscopes; *Spanish; *Vietnamese; *Vocational English (Second Language)

The first part of this document provides a brief account of a project to develop learning modules on the microcomputer and the microscope for use with limited English-proficient speakers of other languages who are enrolled in vocational education courses. The bulk of the document consists of appendixes presenting the modules themselves. The microcomputer modules, which were developed in English and then translated into Spanish, Vietnamese, and Korean, cover the following microcomputer components/accessories and their uses: printed circuit boards, floppy disk drives, floppy disks, visual display screens, printers, computer printout paper, ribbon cables, graphics, graphics pads, lightpens, sensitive boards, modems, and pocket computers. The definition of each component is illustrated by a graphic as it could appear on the accompanying audio tape. The two modules on the structure of a microscope, which are supplied in English, Vietnamese, and Spanish, deal with the way in which objects are magnified, the history of the microscope, microscope lenses, and the parts of a microscope. Each learning experience includes learning activities, a self-check exercise, and a feedback activity.

ED290005

A Curriculum Guide for the Texas Competency Based High School Diploma Programs.

Barrera, Adriana, Comp.

Austin Community Coll., Tex.

May 1985, 274p.

EDRS Price - MF01/PC11 plus postage.

Document Type: Teaching Guide (052)

Major Descriptors: *Competency Based Education; *High School Equivalency Programs

This curriculum guide provides the essential elements and activities for competency-based high school diploma programs. Adult Performance Level (APL) goals and objectives are listed and correlated to appropriate curriculum content areas. The next section indicates which topics/lessons are covered in each unit or part of a unit. Lists that identify topics covered within the APL areas appear next. The essential elements and activities are then outlined for these units or fraction of a unit: Correlated Language Arts I, II, III; Practical Writing Skills; Business Communications; Introductory Physical Science; Introductory Biology; Health Education; Physical Education I, II, III; Economics with Emphasis on the Free Enterprise System and Its Benefits; United States Government; United States History; World History Studies; World Geography Studies; Fundamentals of Mathematics; Consumer Mathematics; and Pre-Algebra. A chart at the beginning of each unit correlates objectives and activities/lessons. The instruction sheet for each activity/lesson provides the following information: objective, resource, and sequence of activities. The guide concludes with information on electives. The essential elements of elective courses are provided for students to use in writing a report.

ED290929

Using Microcomputers in Teaching Vocational Agriculture.

Barrick, R. Kirby, Ed.

American Vocational Association, Alexandria, VA.

1987, 78p.

Available from: Publications Committee, Agricultural Education Division, American Vocational Association, 1410 King Street, Alexandria, VA 22314.

EDRS Price - MF01 plus postage. PC not available from EDRS.

Document Type: Teaching Guide (052)

Major Descriptors: *Agricultural Education; *Computer Software; *Computer Uses in Education; *Vocational Education; *Word Processing

This collection of articles is designed to help vocational agriculture teachers use microcomputers in teaching. The guide covers both the different types of software and the ways they can be applied in teaching. The guide is organized in three sections. The first section covers types of programs and includes "Selection of Microcomputer Hardware and Software for Agricultural Education" (Camp); "Electronic Spreadsheet Applications" (Stitt et al.); "Data Bases for Vocational Agriculture" (Moeller); "Text Editing and Word Processing" (Malpiedi); and "Using Agricultural Information and Networking Services" (Miller, Gamble). The second section provides practical tips on incorporating the computer into an instructional program, including "Computer-Assisted Instruction in Vocational Agriculture" (Foster); "Microcomputers in Supervised Occupational Experience Programs" (Briers); and "Using Microcomputers with the Future Farmers of America" (Carter, Chizek). The final section suggests sources of help for "Generating Instructional Materials" (Giesemann) and "Teaching Students to Use Microcomputers" (Bowen). The articles mention brand names of computer hardware and software and provide comparisons of features as well as prices of the various software programs.

ED289084

A Comparison of Computerized Job Matching Systems. Second Edition.

Botterbusch, Karl F.

Wisconsin Univ.-Stout, Menomonie. Stout Vocational Rehabilitation Inst.

1986, 230p.

Report No.: ISBN-0-916671-76-3

Available from: Materials Development Center, Stout Vocational Rehabilitation Institute, University of Wisconsin-Stout, Menomonie, WI 54751.

EDRS Price - MF01/PC10 plus postage.

Document Type: Directory (132); Research Guide (143)

Major Descriptors: *Career Choice; *Career Guidance; *Computer Oriented Programs; *Computer Software; *Occupational Information; *Vocational Evaluation

This publication describes and compares 15 nationally available computerized job matching systems. The first section discusses job matching systems in general and provides an outline and a summary comparison table of the systems. The second section, which makes up the major part of the document, contains descriptions of 15 systems. For each system, the following information is provided: development, hardware required, software required, machine processing, output, relationship to assessment devices, training, reviewer's summary and contents, address, cost, and references. The following job matching systems are reviewed: CHOICES, Computer Assisted Vocational Rehabilitation Counseling Techniques (VOCOMP); CompuJOBS, Computerized Career Assessment and Planning Program (CCAPP), DataMaster III, Isabel, Job Matching II, Job Opportunity Based Search (JOBS), Job-Person Matching System (JPMS), Labor Market Access (LMA), Occupational Access System (OASYS), ValSEARCH Series, Vocational Adjudicative Rehabilitation System (VARS), Vocational Information Processing System (VIPS) or (AIS), and Work-Match. The third section is a comparative study of the various systems. References and a glossary comprise the final two sections. An appendix contains sample printouts of a test case using the various systems.

ED288090

Marketing: Managing the Marketing Mix. Courseware Evaluation for Vocational and Technical Education.

Fleming, Lian; And Others

Ohio State Univ., Columbus. National Center for Research in Vocational Education.

Mar 1987, 9p. For the basic evaluation form, see ED 244 058.

EDRS Price - MF01/PC01 plus postage.

Document Type: Book-Product Review (072)

Major Descriptors: *Computer Software Reviews; *Courseware; *Management Development; *Marketing

This courseware evaluation rates the Marketing: Managing the Marketing Mix program developed by Control Data Limited. (This program—not contained in this document—is designed to introduce decisions made by marketing managers during the implementation phase of marketing.) Part A describes the program in terms of subject area (marketing, decision making, promotion) and hardware requirements (IBM PC), indicates its suitability for use as a tutorial in adult and higher education, lists supporting materials (learning guide), and gives a time estimate (7 hours). Availability information includes backup policy and contact address. Part B contains the evaluation criteria in eight categories; reviewer ratings appear as yes, somewhat, no, and not applicable, with explanatory comments. Part C summarizes the evaluation. This program received ratings of yes for subject matter, technical presentation, student interaction, documentation, and work behaviors and somewhat for program interaction and student evaluation. Program strengths include good menu structure, ease of use, and variety in testing. Reviewers suggested more use of graphics, linking summary, and more hints for incorrect answers. The program is recommended for supplementary use for owner-managers and marketing managers.

ED296093

Exploring Computer Technology. The Illinois Plan for Industrial Education.

Illinois State Univ., Normal.

1987, 135p. For related documents, see ED 296 091-101.

Available from: Curriculum Publications Clearinghouse, Horrabin Hall 46, Western Illinois University, Macomb, IL 61455.

EDRS Price - MF01 plus postage. PC not available from EDRS.

Document Type: Teaching Guide (052)

Major Descriptors: *Computer Literacy; *Computer Oriented Programs; *Industrial Education; *Industry; *Information Processing; *Technological Literacy

This guide, which is one in the "Exploration" series of curriculum guides intended to assist junior high and middle school industrial educators in helping their students explore diverse industrial situations and technologies used in industry, deals with exploring computer technology. The following topics are covered in the individual lessons: the parts of an information processing system (people, data, procedures—software, and computer technology—hardware); computer hardware (input, processing, storage, and output devices); computer software (elements in a computer system, types of computer languages, various computer languages and their applications, and procedures for entering a program); program planning; procedures for writing a program in BASIC; computer-aided design/drafting; computer-aided manufacturing; robotics; electronic publishing; and management information systems. The guide includes the rationale behind its development, hints to the teacher, lesson plans, student handout masters, teacher aids, a unit examination, and a list of references. The lesson plans include cross-referenced lists of objectives, lesson content, and learning activities.

ED288089

Who Am I? Self-Exploration Series 1. Courseware Evaluation for Vocational and Technical Education.

Miller, Sandra; And Others

Ohio State Univ., Columbus. National Center for Research in Vocational Education.

16 Jun 1987, 9p. For the basic evaluation form, see ED 244 058.

EDRS Price - MF01/PC01 plus postage.

Document Type: Book-Product Review (072)

Major Descriptors: *Computer Software Reviews; *Courseware; *Individual Development; *Self Concept; *Self Evaluation (Individuals)

This courseware evaluation rates the Who Am I? program developed by Instructional Enterprises. (This program—not contained in this document—is an interactive guidance course including four inventories students use to learn more about themselves.) Part A describes the program in terms of subject area (personal development) and hardware requirements (Apple II series), indicates its suitability for use in self-evaluation for students in grades 7-12, and gives a time estimate (30-40 minutes). Availability information includes cost ($39.95), backup and preview policies, and contact address. Part B contains the evaluation criteria in eight categories; reviewer ratings appear as yes, somewhat, no, and not applicable, with explanatory comments. Part C summarizes the evaluation. This courseware was rated yes for subject matter and technical presentation; somewhat for student and program interaction, student evaluation, and documentation; work behaviors and application programs were not applicable. The program's strengths are important subject matter and good student involvement. Weaknesses include limited explanation of interpretation of results and few follow-up suggestions. The program is recommended for use with teacher/counselor discussion and input.

ED288066

Using Technology for Instruction in Vocational Education. Preconference Workshop, Advanced Instructional Technology (Columbus, Ohio, October 6, 1987).

Nasman, Leonard O.

6 Oct 1987, 14p.

EDRS Price - MF01/PC01 plus postage.

Document Type: Review Literature (070)

Major Descriptors: *Computer Assisted Instruction; *Educational Media; *Interactive Video; *Microcomputers; *Videodisks; *Vocational Education

Computer-assisted instruction, when properly designed, can help students retain more of what they learn by requiring them to use more of their senses in the learning process. Although they are not without drawbacks, microcomputers can be effective teaching aids. They can assist teachers by performing routine clerical tasks (grading and recordkeeping), serving as an audiovisual device, and providing access to large educational databases and computer systems. Microcomputers can also assist vocational administrators by allowing them to formulate and revise budgets quickly, perform all the normal business functions entailed in administering a vocational education program, and keep in constant communication with other administrators and with state education officials via modem. Computer-assisted and computer-managed instruction allow vocational educators to individualize instruction. The key to all of these applications, however, is that teachers be given sufficient released time to learn to make full use of the potential of microcomputers, learn what types of software are available, and spend the evaluation time necessary to select the best software for their individual programs. Video technology, interactive videodisk technology, and optical laser disks also offer great promise in that they allow for the merging of the best of the worlds of audiovisual and computer-assisted instruction. As in the case of microcomputers, the problem with using videodisk technology in education remains the lack of availability of appropriate disks and software. The only way to circumvent the barrier imposed by the great cost of producing such software is to spread the cost over greater numbers of students or, in other words, to increase collaboration and sharing of materials among vocational educators.

ED288079

The Challenge of Change. Annual National SOICC Conference Summary (10th, Portland, Oregon, July 27-30, 1987).

National Occupational Information Coordinating Committee (DOL/ETA), Washington, DC.; Oregon Occupational Information Coordinating Committee, Salem.

Jul 1987, 75p.

EDRS Price - MF01/PC03 plus postage.

Document Type: Conference Proceedings (021); Position Paper (120); Research Guide (143)

Major Descriptors: *Career Counseling; *Career Education; *Career Guidance; *Computer Oriented Programs; *Information Networks; *Occupational Information

This document contains summaries of 43 presentations given at the state Occupational Information Coordinating Committee (SOICC) conference: "DoD Career Information Resources" (Wright, Sellman); "Public Relations in a Changing Political Environment: Strategies for SOICCs" (Walker); "Updating Career Exploration and Educational Planning" (Winefordner); "Micro-OIS Enhancements" (Slack et al.); "Financing Strategies When Money Is Tight" (David); "Packaging, Support and Partnership: Keys to Funding" (Thomas); "Planning for the Future: Simulation Modeling" (Harris); "Naval Reserve/Civilian Training Project" (Ollis et al.); "The Future Is Now: Electronic Telecommunications" (Lloyd, Wagner); "National Career Development Association" (Brown); "American Vocational Association" (Hollenback); "Association of Computer-Based Systems of Career Information" (Hawker); "International Association of Personnel in Employment Security" (Gladden); "NOICC: Planning for the Next Five Years" (Lester et al.); "Career Choice Isn't What It Used to Be" (Gelatt); "An Exercise in Communications and Understanding in the Workplace" (Terry); "Students' Biggest Decisions" (Garcia); "Report on Training Workshops: Using Labor Market Information in Career Exploration and Decision Making" (Lloyd, Benshoff); "Use of Data by Vocational Education and Job Training Partnership Act" (Parker); "Use of Labor Market in JTPA Planning" (Frazier); "Regional Planning and Identification of Demand Occupations" (Froeschle); "Implementation of 'The LMI System' in Ohio" (Sommers); "Status Report: Microcomputer Based Occupational Projection System" (Ahlstrom); "Progress Report: The National Assessment of Vocational Education" (Muraskin); "Task Force on Education Reform" (Amico); "Career Information and At-Risk Populations" (Henderson); "Why Are Career Information Systems Effective with At-Risk Youth?" (McKinlay); "What Counselors Need to Know Now and Tomorrow" (Crow); "The Colorado/Utah Test" (Harris); "The Florida Occupational Identifier Project" (Bruce); "The Alaska Experience" (Saddler); "BLS U.I. Coding Reaction" (McElroy); "SIC Revision" (McElroy); "From the Labor Market to the Classroom: A Model of Curriculum Development, Implementation and Evaluation" (Olson, Sherer); "National Guidelines for Career Guidance Standards" (Steele, DeRemer); "Jobs 2000 AD" (Flores); "New Developments in Career Information Delivery Systems" (Washbon et al.); "At-Risk Populations" (Kutscher); "Use of Data by Economic Development Business Expansion/Contraction Data and Economic Development" (Lynch); "Meeting the Labor Market Information Demands of Economic and Industrial Development Requests in Maine" (Fongemie); "Missouri Economic Development Information System" (Raithel); "Congressional Perspective on Education and Training: "How to Meet the Challenge of Change" (Tompkins); and "Planning for the Managing Change: New Demands, New Directions" (Lester).

ED288084

Distance Delivery of Vocational Education Technologies and Planning Matrixes.

Norenberg, Curtis D.; Lundblad, Larry
Minnesota Univ., Minneapolis. Research and Development Center for Vocational Education.
Aug 1987, 67p.
EDRS Price - MF01/PC03 plus postage.
Document Type: Review Literature (070)
Major Descriptors: *Adult Education; *Distance Education; *Educational Technology; *Interactive Video; *Vocational Education

This document presents a general review of distance education as it currently pertains to secondary, postsecondary, and adult education. Chapter I discusses the general concepts of distance education. It addresses the nature of distance education and distance delivery, the distance learner, the distance instructor, and distance education learning materials and teaching methods. Examples of distance education and distance delivery are provided. Chapter II presents, compares, and contrasts technologies associated with distance delivery. These technologies include print materials, audio technologies, audio graphic, full-motion video, and computers. A matrix presents the technologies in one dimension and general, learner, teacher, and pedagogical considerations in the other dimension. Chapter III discusses interactive television separately. Matrix 2 compares and contrasts the various interactive television technologies. Costs, advantages, and limitations are considered. The final chapter contains a summary and conclusions. A bibliography is divided into five areas: distance education—background, technologies, distance delivery systems, pedagogical issues, and research issues and studies.

ED285035

Computer-Aided Drafting. Education for Technology Employment.

Northern Illinois Univ., De Kalb. Dept. of Technology.
Jan 1987, 359p. For related documents, see ED 285 032-036.
EDRS Price - MF01/PC15 plus postage.
Document Type: Teaching Guide (052)
Major Descriptors: *Competence; *Computer Graphics; *Computer Oriented Programs; *Drafting

This computer-aided drafting (CAD) curriculum was developed to provide drafting instructors in Illinois with a useful guide for relating an important new technological advance to the vocational classroom. The competency-based learning activity guides are written to be used with any CAD system being used at the secondary and postsecondary levels. The CAD curriculum includes the following components: identified CAD tasks, measurable components of performance, identified objectives, information and activity requirements, and mastery requirements. Appendixes include a troubleshooting guide, mathematics/science concept analysis, a crosswalk relating the state recommended drafting task list with the CAD curriculum, and a list of employability skills.

ED285033

Home Economics. Education for Technology Employment.

Northern Illinois Univ., De Kalb. Dept. of Technology.
Jan 1987, 189p. For related documents, see ED 285 032-036.
EDRS Price - MF01/PC08 plus postage.
Document Type: Teaching Guide (052)
Major Descriptors: *Child Development; *Computer Assisted Instruction; *Cooking Instruction; *Courseware; *Home Economics; *Nutrition Instruction

This guide was developed in an Illinois program to help home economics teachers integrate the use of computers and program-related software into existing programs. After students are taught the basic computer skills outlined in the beginning of the guide, 50 learning activities can be used as an integral part of the instructional program. (One or more Apple II-series computers are needed.) Tutorial, drill, simulation, problem solving, and educational games are suggested methods of instruction. Each learning activity contains information on the following topics: the software, the hardware, the lesson, introducing the computer activity, preparing for the computer, the computer activity, after the computer, additional suggested activities, and handouts. Some of the topics covered are diets, the microwave oven, planning nutritious meals, the food processor, cooking and baking, child care, fashion careers, clothing construction, and career development. A bibliography listing title, author, publisher, address, and price of home economics-related software is included.

ED285034

Information Processing. Education for Technology Employment.

Northern Illinois Univ., De Kalb. Dept. of Technology.
Jan 1987, 936p. For related documents, see ED 285 032-036.
EDRS Price - MF06/PC38 plus postage.
Document Type: Teaching Guide (052)

Major Descriptors: *Competence; *Computer Graphics; *Computer Oriented Programs; *Computer Software; *Database Management Systems; *Telecommunications

This information processing curriculum was developed to provide business education instructors in Illinois with a useful guide for relating important new technological advances to the vocational classroom. The competency-based learning activity guides are written to be used with computer hardware and software available at the secondary and postsecondary levels. The curriculum consists of validated tasks prepared by teachers for teachers. It contains units in spreadsheets, records management (electronic and manual), database management systems, business graphics, telecommunications, and integrated software. Each section is divided into tasks. After the learner outcome is identified, information sheets, activity sheets, and evaluations are provided. Appendixes include (1) an analysis of the science, mathematics, communications, and work ethic concepts used in information processing and (2) a crosswalk relating work duties and tasks (delineated by the state board of education) with the learner outcomes presented in the various sections of the information processing guide.

ED288963

Technique for Computer Use: Software Evaluation. BASICS: Bridging Vocational and Academic Skills.

Pritz, Sandra G.; Crowe, Michael R.

Ohio State Univ., Columbus. National Center for Research in Vocational Education.

1987, 50p. For related documents, see ED 252 701-702, ED 252 737-739, ED 257 995, ED 266 264, ED 276 873, and ED 288 955-964.

Sponsoring Agency: Office of Vocational and Adult Education (ED), Washington, DC.

Available from: National Center Publications, Box SP, National Center for Research in Vocational Education, 1960 Kenny Road, Columbus, OH 43210-1090 (Order No. SP300ED—$7.50; complete BASICS set, SP300—$198.00).

EDRS Price - MF01 plus postage. PC not available from EDRS.

Document Type: Non-Classroom Material (055)

Major Descriptors: *Computer Assisted Instruction; *Computer Software Reviews; *Courseware; *Integrated Activities; *Vocational Education

This guide contains a compilation of suggestions and guidelines to assist secondary-level teachers in planning to make the most effective use of computer-assisted instruction (CAI) through careful courseware evaluation. It is part of BASICS, a set of integrated materials developed to assist teachers, administrators, and counselors in bridging vocational and academic skills. An introduction defines CAI and relates it to the joint vocational-academic approach. The next three sections are structured around a checklist that deals with three major tasks: plan for effective use of the computer, establish guidelines for developing or evaluating software, and evaluate courseware. Three steps in planning for effective use of the computer are discussed: identify the benefits of CAI, identify appropriate tasks for CAI, and identify strategies for CAI. Establishing guidelines involves the following steps: identify the learning objectives and tasks, determine teaching effectiveness, evaluate appropriate use of computer capabilities, identify management possibilities, and evaluate documentation. The section on courseware evaluation provides information about microcomputer courseware evaluation sources and the Microcomputer Courseware Evaluation Form and Guide.

ED290854

Computerized Distance Delivery of Vocational Teacher Education.

Pucel, David J.

6 Dec 1987, 20p. Paper presented at the Annual Meeting of the American Vocational Association (Las Vegas, NV, December 6-10, 1987).

EDRS Price - MF01/PC01 plus postage.

Document Type: Research Guide (143); Conference Paper (150)

Major Descriptors: *Competency Based Teacher Education; *Computer Assisted Instruction; *Distance Education; *Vocational Education Teachers

The University of Minnesota offered an experimental course to teach people to develop performance-based instruction courses and programs for education and industry. Computer-based teacher education was provided through distance delivery independent study with tutoring. The course was designed using the performance-based instructional design procedures being taught. Data were collected from 17 of the 21 people who started the course. Forty-seven percent indicated that their attitudes toward computer-assisted instruction (CAI) changed for the better; 76 percent had very good or good opinions about CAI; 82 percent said that the CAI format of the course would help them as instructors; and 93 percent of those who responded to the question about expectations about the course indicated that expectations were met. Some unique planning and delivery problems were posed for teacher educators by delivery of teacher education courses through distance delivery CAI; these problems concerned course structure, course orientation, teaching time, and learner time. Advantages to the delivery method were self-pacing, taking of courses at remote locations, savings for teacher education institutions, savings of time and money for students, and higher probability of mastery of course content and higher quality of products. Primary disadvantages were lack of immediate feedback, time to operate a computer, and no textbook for reference.

ED294040
Selecting and Evaluating Software for Vocational Education.
Rodenstein, Judith
Wisconsin Univ., Madison. Vocational Studies Center.
[1987], 208p.
EDRS Price - MF01 plus postage. PC not available from EDRS.
Document Type: Non-Classroom Material (055)
Major Descriptors: *Computer Assisted Instruction; *Courseware; *Instructional Material Evaluation; *Media Selection; *Vocational Education

This handbook is intended to guide the vocational educator through the task of selecting and evaluating software for the vocational curriculum. Section 1 focuses on computer-based education. Chapter 1 defines computer-based education and the hardware and software required when the computer is used as an educational delivery system. Chapter 2 discusses strategies to integrate computer-based education into the vocational education curriculum. Section 2 describes the tasks to complete when establishing policies and procedures to evaluate and select software. Chapters 3-9 address these seven tasks: defining quality in software, planning, locating software, identifying and obtaining software to fit instructional needs, evaluating software, recommending a software purchase, and organizing software for easy access. Appendixes contain the names and addresses of such national resources as clearinghouses and information centers, state and locally funded agencies, software publishers and suppliers, publications on microcomputers and high technology, and magazines, journals, and periodicals that contain general information about microcomputers and software reviews. Sample evaluation forms are also appended.

ED286039
Technology Education. A Curriculum Guide. VOC ED 226.
Thode, Brad
Idaho State Dept. of Education, Boise. Div. of Vocational Education.
1987, 65p.
EDRS Price - MF01/PC03 plus postage.
Document Type: Teaching Guide (052)
Major Descriptors: *Communications; *Computer Oriented Programs; *Industrial Arts; *Lasers; *Technological Advancement; *Technology

This curriculum guide provides ideas for implementing technology education in grades 7-12. It assumes a basic understanding of the four clusters of manufacturing, construction, communications, and power/transportation and is meant to supplement and reorganize this approach with up-to-date information and activities. One way to present a variety of technological concepts in industrial arts is outlined. A technology education task list that groups the tasks into six modules follows. The module titles are: computer applications in technology; automation, robotics, and industrial practices; light, lasers, and fiberoptics; communication technology; technology/academic correlation; and future technology. An outline provides an overview of how technology education can be integrated into the four cluster approach. Each supporting objective is listed according to related cluster areas. Another outline lists tasks under the six modules. A performance objective and enabling objectives are given for each task. Appendixes include a glossary of computer terms for technology education, a list of suggested resources and related materials on implementation of a technology education program, an introduction to robotics for technology education instructors, and a communications model.

ED288091
The Interior Design Simulator. Courseware Evaluation for Vocational and Technical Education.
Worts, Nancy; And Others
Ohio State Univ., Columbus. National Center for Research in Vocational Education.
16 Aug 1987, 9p. For the basic evaluation form, see ED 244 058.
EDRS Price - MF01/PC01 plus postage.
Document Type: Book-Product Review (072)
Major Descriptors: *Computer Simulation; *Computer Software Reviews; *Courseware; *Furniture Arrangement; *Interior Design

This courseware evaluation rates the Interior Design Simulator program developed by Orange Juice Software Systems. (This program—not contained in this document—allows the user to design a room of any shape with maximum dimensions of 14 x 26 feet.) Part A describes the program in terms of subject area (furniture arrangement) and hardware requirements (Apple II series), indicates its suitability for use as a tutorial or simulation for grades 9-12, and gives a time estimate (30-45 minutes). Availability information includes cost ($50.00), preview policy (30 days), and contact address. Part B contains the evaluation criteria in eight categories; reviewer ratings appear as yes, somewhat, no, and not applicable, with explanatory comments. Part C summarizes the evaluation. The program was rated yes for subject matter and somewhat for technical presentation, student and program interaction, student evaluation, documentation, and work behaviors. Strengths include good simulation of furniture arranging, but reviewers suggested a need for more rules and more application questions. The program is recommended for a class in basic furniture arranging to give students practice.

Writing

ED289626
Writing To Read and Full Day Kindergarten Evaluation.
Brierley, Mirian
Columbus Public Schools, OH. Dept. of Evaluation Services.
Nov 1987, 36p.
EDRS Price - MF01/PC02 plus postage.
Document Type: Evaluative Report (142)
Major Descriptors: *Computer Assisted Instruction; *Computer Uses in Education; *Kindergarten; *Preschool Children; *Social Adjustment

Children in Columbus, Ohio public schools participated in two nontraditional kindergarten programs during the 1986-1987 school year. Evaluations of the programs were undertaken to determine their success. One program involved a full day kindergarten that featured opportunities for increased personal and social development, as well as instruction in art, music, physical education, and other curriculum areas. The second program involved interactive experiences with microcomputers and the Writing to Read (WTR) program which were intended to develop reading and writing skills. For evaluation purposes, children were divided into four groups: a control half-day kindergarten group, a full-day group, a half-day WTR group, and a group participating in WTR on a full day basis. Language and reading achievement were determined by pretest and posttest scores on the Metropolitan Achievement Test, and social adjustment was evaluated on the basis of teacher-assigned grades. Evaluation findings indicated higher achievement for students in the full-day kindergarten and WTR programs, and better adjustment to school in the WTR classrooms. Students in the half-day kindergartens showed better adjustment skills associated with personal and social growth than did students in the full-day kindergartens. Appendixes include a writing sample prompt, a list of criteria for rating writing samples, and a sample progress report form.

ED292115
How Composing Aloud and Computer Composing Influence Composing Processes.
Butler-Nalin, Kay
1987, 36p.
EDRS Price - MF01/PC02 plus postage.
Document Type: Research Report (143)
Major Descriptors: *Computer Assisted Instruction; *Revision (Written Composition); *Writing Processes

To investigate how writing might be affected by composing aloud and computer composing—two factors that are increasingly being used either to study composing processes or to alter the typical context in which students write—a study described the composing process of five junior high school students. The students wrote four compositons, one in each mode/medium combination: students composed silently or students composed aloud, and students composed using paper and pencil or students composed using a computer with a text processor. The topics given for the writing episodes elicited writing which was reporting (chronological, first-person narrative) in function. Findings indicated that each writing context produced changes in particular aspects of students' composing processes. In a writing context where students composed aloud, more complex patterns of composing occurred than when students composed silently, and in a writing context where students composed using a text processor more revising and more recursive composing processes occurred than when students used pencil and paper. Additionally, students reread their text more frequently and were also more likely to revise after they had reread their text during computer composing. (Eight tables of data are included and 22 references are attached.)

ED288199
Teaching Writing with Computers: Are We Being Realistic?
Herrmann, Andrea W.
Oct 1987, 15p. Paper presented at the Annual Meeting of the South Central Modern Language Association (Houston, TX, October 29-31, 1987).

EDRS Price - MF01/PC01 plus postage.
Document Type: Conference Paper (150)
Major Descriptors: *Computer Assisted Instruction; *Computer Uses in Education; *Word Processing; *Writing Instruction

While teachers of writing and related disciplines have become increasingly convinced of the value of computers in classrooms, there have also been reports of obstacles that arise when innovating with computers and word processing in the schools. Educators must determine whether the problems are mere inconveniences or potential barriers to the successful implementation of computers as writing tools. Among the difficulties and related observations are the following: (1) computer instruction at the high school level tends to be about the computers themselves rather than using computers to teach content area subjects; (2) teachers and administrators need to collaborate concerning pedagogical applications of computers; (3) teachers also need to collaborate with students about their needs in computer-based writing classes; (4) teachers require opportunities and incentives to acquire the skills it takes to understand and teach with computers; (5) teachers must decide the role of the computer in their classroom (i.e., drill and practice or composing tool); (6) students and teachers both must adjust to the interactive nature of computer learning; (7) teachers should consider whether to use other writing software in addition to word processing, such as outlining, spelling, and style software; (8) administrators need to create ongoing inservice programs designed to be responsive to computer-using English teachers; and (9) educators can choose to view change caused by using computers as liberating rather than threatening. (Seven references are appended.)

ED292094
Research into Writing and Computers: Viewing the Gestalt.
Herrmann, Andrea W.
Dec 1987, 13p. Paper presented at the Annual Meeting of the Modern Language Association (San Francisco, CA, December 27-30, 1987).
EDRS Price - MF01/PC01 plus postage.
Document Type: Review Literature (070); Position Paper (120); Conference Paper (150)
Major Descriptors: *Computer Assisted Instruction; *Research Methodology; *Word Processing; *Writing Improvement; *Writing Research

If research into writing, particularly on computers as writing tools, is to assist teachers to improve writing pedagogy, the emphasis should be toward conducting naturalistic and context-sensitive studies. Early studies involved traditional experimental research instruments and looked not at the learning process but at the written product, measuring number of words, errors, number of revisions and quality of product rather than evaluating focus, organization and the ability to use arguments, details and examples effectively. When asking if student writing is instantly transformed via the computer's magic wand the more relevant question is not whether the writing is good or bad, but rather whether students have become more engaged by the writing process and acquired more sophisticated techniques for composing, revising and editing. Better instruments for evaluating and comparing texts must be devised if research results are to be significant. Although the important relationships between context and writing have gone unexplored until fairly recently, they are increasingly recognized as an important element; context-sensitive classroom-based research can provide important information for developing teaching strategies and hopefully shed light on the relationship to the students' progress as learners.

ED296719
Process Variables in Writing Instruction Using Word Processing, Word Processing with Voice Synthesis, and No Word Processing in Second Grade.
Kurth, Ruth Justine
Apr 1988, 24p. Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April 5-9, 1988).
EDRS Price - MF01/PC01 plus postage.
Document Type: Research Report (143); Test, Questionnaire (160); Conference Paper (150)
Major Descriptors: *Computer Assisted Instruction; *Word Processing; *Writing Instruction; *Writing Skills

A study at [illegible] small southwestern suburban school examined specific process variables which occurred as children were taught composition skills using word processing, word processing with voice synthesis, and no word processing. Subjects were 45 second grade students, who were divided into three groups on the basis of scores on a reading comprehension test; each group was made up of equal numbers of average, below average, and above average readers. One group was taught writing using beginning word processors and printers; the second group used word processors which utilized speech and printers; and the third group was taught without using word processing equipment. The curriculum emphasized composition strategies designed for young children, and all groups were given the same assignments. Completed compositions were linguistically analyzed for holistic quality, and the behavior of target subjects in each group was monitored. Data were analyzed in several areas: composition length; composition quality; invented spellings; peer interaction during writing; writing and editing; development of collaborative skills; influence of peer writers; developing a sense of audience; persistence when writing; and function of the voice synthesizer. Results indicated that children can benefit from careful instruction in composition in any of these settings, that they can master the rudiments of word processing with little training, and that word processing can free them from the difficulty of manuscript writing. (43 references)

ED286186

Going beyond Word Processing: A Survey of Computer-Based Approaches for Writing Instruction.

Oates, William R.; Oates, Rita Haugh

4 Aug 1987, 21p. Paper presented at the Annual Meeting of the Association for Education in Journalism and Mass Communication (70th, San Antonio, TX, August 1-4, 1987).

EDRS Price - MF01/PC01 plus postage.

Document Type: Conference Paper (150); Non-Classroom Material (055)

Major Descriptors: *Computer Assisted Instruction; *Computer Uses in Education; *Instructional Improvement; *Word Processing; *Writing Instruction

Noting that (1) current research suggests that technology may contribute to improved instruction in writing but it does not do so automatically, and (2) while teachers may successfully employ computers with their writing students, their choices of methods remain critical, this paper surveys computer approaches and appropriate software for effective writing instruction. These include: prewriting software, composing tools, editing and revising approaches, and instructional software for writing skills. In addition, the paper briefly reviews new areas related to computer technology—desktop publishing, telecommunications, and electronic bulletin boards. The methods presented represent a composite of approaches developed by national leaders in computer writing instruction from the National Council of Teachers of English and the Association for Education in Journalism and Mass Communication.

ED291099

Rewrapping the Package: Helping Students To Rewrite Willingly.

Poger, Fran; And Others

Nov 1987, 12p. Paper presented at the Annual Meeting of the National Council of Teachers of English (77th, Los Angeles, CA, November 20-25, 1987). Document contains light type.

EDRS Price - MF01/PC01 plus postage.

Document Type: Conference Paper (150); Teaching Guide (052)

Major Descriptors: *Computer Assisted Instruction; *Peer Evaluation; *Revision (Written Composition); *Writing Exercises; Writing Improvement

Based on the notion that children will rewrite willingly if given a definite purpose, three alternatives for revision connect the necessity of revision to the students' acceptance and desire to revise. The first alternative is to have the children revise their original story format, where the basic storyline remains the same, but the ideas, vocabulary, and sentence structure are expanded. Another suggestion is to have the students rewrite their stories for a different audience. For example, intermediate level students would redraft stories for primary students by conferencing with the younger children about their preferences and understanding. The third idea is to have students revise their stories with the use of the computer. Students are paired with peer editors and rewrite previously saved documents to improve the original text. Interactions between various grade levels proved to be successful and motivated students to improve their original drafts.

ED291105

Using an Electronic Network To Create a Read Context for High School Writing.

Schwartz, Jeffrey

1987, 7p. Narrative report for the National Council of Teachers of English Teacher-Researcher Project.

EDRS Price - MF01/PC01 plus postage.

Document Type: Research Report (143); Teaching Guide (052)

Major Descriptors: *Audience Analysis; *Computer Assisted Instruction; *Cultural Differences; *Electronic Mail; *Writing Instruction

In an effort to broaden the context for classroom writing by providing an audience other than the teacher and classmates, a study used microcomputers, a modem and an electronic mail service to set up communications with classes in other communities. Two classes (27 students) at Sewickley Academy in Pennsylvania communicated for a semester with two classes from Wilsall, Montana (19 students) and one class (23 students) from Kyle, South Dakota. Students wrote in a variety of forms—notes, letters, stories, interviews, drafts, transcripts, and summaries—writing informally and formally and adjusting to the particular rhetorical situation by determining what the reader needed to know, what tone to adopt, and what form to write in. The three schools were extremely different from each other: Kyle is located on a Sioux reservation, Wilsall is very small school in the Rocky Mountains, and Sewickley Academy is a private school in an affluent suburb of Pittsburgh. The students began their course investigating their preconceptions of the other communities, writing about and expressing their stereotypes freely in class. At the completion of the course the majority of the Sewickley students agreed that they were more aware of cultural differences in the United States and had learned to question stereotypes, suggesting that the range of discourse was important not only in teaching students to be agile writers but also in providing a situation where students write to find out about different people and other communities.

ED293130
Computer-Assisted Writing Instruction. ERIC Digest Number 2, 1988.
Tone, Bruce; Winchester, Dorothy
ERIC Clearinghouse on Reading and Communication Skills, Bloomington, IN.
1988, 4p.
EDRS Price - MF01/PC01 plus postage.
Document Type: ERIC Product (071)
Major Descriptors: *Computer Assisted Instruction; *Word Processing; *Writing Instruction

Reports in the ERIC database have found that computer-assisted writing instruction has some effect—if not a dramatic impact—in both the quantity and quality of student writing. Although computers are becoming more common in schools, the influx of computers into schools may not assure students ample opportunity to use them. Limited time-on-task may be one of the reasons. However, the computer will almost certainly become more and more a part of the lives of students, whatever the limits of the experience they have in using computers in school. The computer's great advantage for writers who know how to compose on one is its facilitation of revision. (Twenty references are included.)

ED289157
The Effects of Writing on Reading Abilities: A Comparison of First Grade Writing Programs with and without Computer Technology.
Whitmer, Jean Elizabeth; Miller, Margaret
13 Sep 1987, 92p. Paper presented at the Annual Reading Conference (18th, Greeley, CO, October 16, 1987).
EDRS Price - MF01/PC04 plus postage.
Document Type: Research Report (143); Conference Paper (150)
Major Descriptors: *Computer Assisted Instruction; *Reading Instruction; *Reading Writing Relationship

The IBM Writing to Read program for children in kindergarten and first grade uses computers with voice output and IBM selectric typewriters to encourage writing and hence reading development. A study examined whether increased writing activity without the use of the technology would produce similar gains in reading. A classroom from the IBM program (group A) and an experimental writing classroom (group B) were compared with each other and with a control classroom (group C). Group A used a lab five hours per week for computer-based instruction in sound-symbol relationships, followed by structured story-writing and reading. Group B received four weekly hours of structured story-writing followed by reading, discussing, and expanding the stories. Group C spent approximately two weekly hours in their usual writing activities. Scores showed that the IBM group's gains in Reading Comprehension and Reading Total were significantly higher than those of the control group. Mean gains for group B fell between the other two groups, differing significantly from neither. Among girls, mean gains were greatest in group A and, surprisingly, lowest in group B; however among boys, mean gains were highest in group A, lowest in group C. This suggests that structured writing time, regardless of technology, may have increased their reading abilities. The amount of time scheduled for structured writing appeared to be an important factor. (Student writing samples are included.

SPECIAL POPULATIONS

Adult Education

ED286023
Bilingual Microcomputer Business Skills Course. Vol. I. Joint Lesson 1-7.
Castro, Jesus; And Others
Hacer Hispanic Women's Center, Inc., New York, NY.
1987, 387p. For related volumes, see ED 286-024-025.
EDRS Price - MF01/PC16 plus postage.
Document Type: Teaching Guide (052)
Major Descriptors: *Clerical Occupations; *Computer Literacy; *Computer Oriented Programs; *Microcomputers; *Office Occupations Education; *Vocational English (Second Language)

This curriculum guide for the Bilingual Microcomputer Business Skills Course reflects modern office practices and technology and encompasses 19 joint lessons. This volume, one of three, contains seven competency-based joint lessons, the focus of which is on mastering specific tasks needed to accomplish the job of the occupational cluster of clerical worker while also learning job-related English as a second language (ESL). The language level of the lessons is designed for a trainee with high-intermediate to advanced levels of English language proficiency. Teacher materials include a curriculum outline. Each joint lesson includes these components: a cover sheet (identifying related communicative task, vocational task, performance objective, steps and technical knowledge, technical terms, language functions, language structures, tools and materials, background knowledge, safety, attitudes, learning activities and resources—vocational and job-related ESL); technical terms sheets; information sheets; operation sheets; job sheets; activity sheets; and performance evaluation sheets. The seven joint lessons/tasks are: boot an Apple II Plus microcomputer; correct typographical errors in a letter; open, name, and save a file, rename or delete a file; type, save, and print a memorandum on a microcomputer; type, save, and print a letter on a microcomputer; type, save, and print a manuscript on a microcomputer; and edit a heavily proofread text and save on a microcomputer and then print with 100 percent accuracy.

ED286024
Bilingual Microcomputer Business Skills Course. Vol. II. Joint Lesson 8-14.
Castro, Jesus; And Others
Hacer Hispanic Women's Center, Inc., New York, NY.
1987, 323p. For related volumes, see ED 286 023-025.
EDRS Price - MF01/PC13 plus postage.
Document Type: Teaching Guide (052)
Major Descriptors: *Clerical Occupations; *Computer Oriented Programs; *Microcomputers; *Office Occupations Education; *Vocational English (Second Language)

This curriculum guide for the Bilingual Microcomputer Business Skills Course reflects modern office practices and technology. This volume, second of three, contains seven competency-based joint lessons, the focus of which is on mastering specific tasks needed to accomplish the job of the occupational cluster of clerical worker while also learning job-related English as a second language (ESL). The language level of the lessons is designed for a trainee with high-intermediate to advanced levels of English language proficiency. Each joint lesson include these components: a cover sheet (identifying related communicative task, vocational task, performance objective, steps and technical knowledge, technical terms, language functions, language structures, tools and materials, background knowledge, safety, attitudes, learning activities and resources (vocational and job-related ESL); technical terms sheets; information sheets; operation sheets; job sheets; activity sheets; and performance evaluation sheets. The seven joint lessons/tasks are: answer several incoming telephone calls; take and disseminate telephone messages; obtain zip codes from the post office; open/notate, arrange (classify), and distribute incoming mail; prepare outgoing mail; reproduce and collate documents; and compute the cost of purchasing stamps.

ED286025
Bilingual Microcomputer Business Skills Course. Vol. III. Joint Lesson 15-19.
Castro, Jesus; And Others
Hacer Hispanic Women's Center, Inc., New York, NY.
1987, 221p. For related volumes, see ED 286 023-024.
EDRS Price - MF01/PC09 plus postage.
Document Type: Teaching Guide (052))

Major Descriptors: *Clerical Occupations; *Computer Oriented Programs; *Microcomputers; *Office Occupations Education; *Vocational English (Second Language)

This curriculum guide for the Bilingual Microcomputer Business Skills Course reflects modern office practices and technology. This volume, third of three, contains five competency-based joint lessons, the focus of which is on mastering specific tasks needed to accomplish the job of the occupational cluster of clerical worker while also learning job-related English as a second language (ESL). The language level of the lessons is designed for a trainee with high-intermediate to advanced levels of English language proficiency. Each joint lesson include these components: a cover sheet (identifying related communicative task, vocational task, performance objective, steps and technical knowledge, technical terms, language functions, language structures, tools and materials, background knowledge, safety, attitudes, learning activities and resources (vocational and job-related ESL); technical terms sheets; information sheets; operation sheets; job sheets; activity sheets; and performance evaluation sheets. The five joint lessons/tasks are: record supplies; order office supplies by phone; order office supplies using purchase order form; file in alphabetical order; and file by subject.

ED296184

Computer-Assisted Instruction in Adult Literacy Education. Practice Application Brief.

Imel, Susan

ERIC Clearinghouse on Adult, Career, and Vocational Education, Columbus, Ohio.

1988, 3p.

EDRS Price - MF01/PC01 plus postage.

Document Type: ERIC Product (071)

Major Descriptors: *Adult Literacy; *Adult Programs; *Computer Assisted Instruction; *Literacy Education

This Brief first summarizes research findings regarding computer-assisted instruction (CAI) and its effectiveness in adult literacy education programs. The following findings are given: CAI is effective for a significant number of adult learners; CAI is effective because it provides the adult learner with flexibility, control, individualization, privacy, and immediate feedback; CAI effectiveness depends to a great extent upon the instructional staff; undereducated adults have positive attitudes toward computers and are interested in using them in their educational programs; and CAI effectiveness is limited by the shortage of appropriate software. The Brief then provides guidelines for effective use of CAI in adult literacy instruction. They include familiarizing all instructional staff with the CAI aspects of the literacy program; providing sufficient demonstration time and enough individual personal assistance for students to feel comfortable using computers; providing training and inservice opportunities for instructional staff; using only software appropriate for adult learners; not thinking of the computer only as a tool for individual use; providing for flexible scheduling of microcomputer use; not depending on the computer to be the sole source of instructional support; and providing opportunities for students to develop occupational skills through CAI. (13 references)

ED287462

Training for Development and Use of Generic Software Programs.

Marshall, Joan H.; Rettig, Julianne D.

Indiana Univ. of Pennsylvania, Indiana.

15 Jun 1987, 40p.

EDRS Price - MF01/PC02 plus postage.

Document Type: Computer Programs (101); Project Description (141); Test, Questionnaire (160)

Major Descriptors: *Authoring Aids (Programing); *Computer Assisted Instruction; *Courseware; *Media Adaptation; *Teacher Developed Materials

Five part-time adult basic education instructors were trained to develop tutorials for their students by using the SuperPILOT authoring language to insert their own questions, answers, and hints in already existing generic programs. The project involved 18 hours of training and ongoing supervision and review of products. A total of 66 tutorial programs, which are available for dissemination, were completed. It is noted that one outcome of the program has been greatly increased use of computer-assisted instruction in the classroom and that feedback from sites where these programs have been used is encouraging. Listings of the SuperPILOT tutorial programs for two lessons, a partial list of the tutorials that were developed, and evaluations of the training program are appended. Seven references are provided.

ED286066

Adult Literacy and Technology Conference Proceedings (University Park, Pennsylvania, June 4-7, 1987).

Meenan, Avis L., Comp.; Burns, Patricia E., Comp.

Pennsylvania State Univ., University Park. Inst. for the Study of Adult Literacy.

Jun 1987, 73p.

EDRS Price - MF01 plus postage. PC not available from EDRS.

Document Type: Conference Proceedings (021); Teaching Guide (052); Research Report (143)

Major Descriptors: *Adult Literacy; *Computer Uses in Education; *Educational Technology; *Literacy Education; *Staff Development; *Technological Advancement

These proceedings contain the summaries of 60 presentations. Among those included are: "Desk Top Publishing & Experiential Literacy Material" (Arnold); "A Description of the U.S. Experience in Providing Vocational Skills to Individuals with Low Literacy Skills" (Barbee); "Audio-Disk Technology" (Bixler, MacClay); "Technology for Teachers: A Group Instruction Communication Network" (Brown); "Application of Interactive Video" (Gacka et al.); "Methods of Incorporating Technology into an Adult Resource Learning Center" (Gold, Chetelat); "Technology Breaks the Print Barrier" (Harrington, Sokol); "PLATO: Past-Present-Future" (Manak et al.); "Technology and Adult Education: The Massachusetts Model" (Milley); "Interactive Videodisc Systems for Adult Learning" (Pyatte); "Technology & Literacy" (Turner); "Beyond Word Processing: Using Interactive Writing Software" (Bartholomew); "The ENFI Project: Computer Networks, Collaborative Writing, & Literacy" (Batson); "Adaptive Uses: Older Technologies for Literacy in Developing Countries" (Brace); "Using Databases for Developing Thinking Skills in Adult Literacy" (Budin); "Adult Beginning Reading Instruction & the Computer" (Carman, Lower); "Meeting the Needs of Adult Learners" (Copeland); "Comprehensive Competencies Program" (Dassance); "Computers in Schools" (Gilbertson-Winburne, Green); "Adults' Attitudes toward Computers" (Lewis); "Using Computer Technology in a Volunteer Tutor Literacy Program" (MacCallister); "Reading, Thinking, & Computing" (Marshall); "Setting Up and Managing a CAI Laboratory" (Miller-Parker); "American Ticket: Electronic Motivation & Learning" (Oliver); "Educational Needs of Dislocated Workers" (Park); "CAI and the Adult Student" (Whittle); "Literacy Efforts Involving CAI in Missouri" (Jorgenson, Hollenbeck); "Dropouts: A Holistic Approach" (VanBrugghen); "Language Skills Improvement: The COMPRIS Experience" (Davies); "Proven Use of Human Voice in Interactive Software for Non-Readers" (Eversole); "Integrating Reading & Writing Software into a Literacy Curriculum" (Jagger); "Computerized Help for Adult Illiterates" (McConkie, Zola); "Creating Your Own Software for ABE/GED" (Marshall et al.); "Developing a Statewide Toll-Free Hotline" (Martin, Hudson); "Beyond Basic Literacy: Critical Reading with LECTOR" (Orndorff); "Templates for Literacy" (Stone); "Effective Use of Computers & Software in Adult Literacy Programs" (Szatkowski); "Information Sharing: The Goal Oriented Adult Learning Program" (Weyers et al.); "A New Path to Literacy: The Microcomputer & Interactive, Language Experience Based Approach" (Wangberg); "Enhancing Reading & Writing with Current Software" (Young); "Using Video Packets for Staff Development in ABE" (Fleischman, Tibbetts); "Microcomputers and Teaching Styles" (Migliorelli); and "Computers and the Role of Teachers" (Moscow).

ED292946

An Annotated List of Software for Basic Reading and Conversational English. Computer Assisted Instruction Review. Vol. 1.

Rich, Leslie, Comp.; And Others

Literacy Volunteers of America, Inc., Syracuse, NY.

Oct 1986, 49p.

Available from: Literacy Volunteers of America, Inc., 5795 Widewaters Pkwy., Syracuse, NY 13214 ($3.00).

EDRS Price - MF01 plus postage. PC not available from EDRS.

Document Type: Bibliography (131)

Major Descriptors: *Computer Assisted Instruction; *Courseware;*Literacy Education; *Reading Instruction; *Tutoring

This annotated bibliography reviews 41 pieces of educational software that are marketed for use in basic reading and conversational English programs. A variety of educational games, drill and practice programs, tutorials, problem-solving programs, and utility and authoring systems is included. Reading, math, writing, vocabulary, grammar, spelling, journalism, letter recognition, science, and geography are among the subject areas covered by the individual programs. Each review contains some or all of the following: product name; publisher; cost; publication date; hardware requirements; reading level; interest level; subject area; program type; target audience (student, administrative, individual, group); ratings of the program's user-friendliness, thematic relevance to adults, worth for adult beginning readers, clarity of documentation, and ease of management; comments; and an annotation.

ED286046

Language Experience Approach for Computer-Aided Instruction in a Volunteer-Taught Adult Literacy Program. An Instructional Guide.

Smith, Jeanne H.

Center for Literacy, Inc., Philadelphia, PA.

31 Aug 1987, 76p.

EDRS Price - MF01/PC04 plus postage.

Document Type: Teaching Guide (052)

Major Descriptors: *Adult Literacy; *Computer Assisted Instruction; *Language Experience Approach; *Literacy Education; *Reading Instruction; *Tutoring

This guide was designed for trained tutors who teach adult literacy students on a one-to-one basis using a computer with a word-processing program. The guide is organized in five parts. The first part covers the use of computers in adult literacy and the language experience approach, a method in which the student's own words and stories are used as the text for teaching reading. Steps for designing lessons using the language experience approach are given. Part 2 contains sample lessons based on experiences with adult students, and Part 3 consists of resource lists of reading and writing terms and teaching methods. An overview of phonics is included. Additional resources, such as computer terms and more information about word processing, make up Part 4, and Part 5 contains hints for developing and managing a computer center for adult literacy students. A bibliography completes the guide.

ED289073

The Development of Computer Confidence in Seniors.

Temple, Lori L.; Gavillet, Margaret

Oct 1987, 8p. Paper presented at the Annual Meeting of the American Association for Adult and Continuing Education (Washington, DC, October 19-24, 1987).

EDRS Price - MF01/PC01 plus postage.

Document Type: Research Report (143); Conference Paper (150)

Major Descriptors: *Anxiety; *Computer Literacy; *Computer Science Education; *Older Adults; *Outcomes of Education

A computer confidence course designed to teach the fundamentals of computer literacy was offered to 19 members of the Las Vegas (Nevada) Senior Center (mean age = 63.9 years). Computer anxiety and computer literacy measures were taken before and after the 12-hour course. The course curriculum included sections on computer knowledge, computer applications, and computer programming. An expected decrease in anxiety did not occur, although there was a significant increase in literacy. The results indicate that older computer users have both a willingness to explore the functions of computers and an ability to use the computers to enhance daily functioning.

ED296156

Adult Literacy & Technology.

Turner, Terilyn C.

30 Jul 1988, 7p. Paper presented at the National Conference on Adult Literacy and Technology (2d, Pittsburgh, PA, July 27-31, 1988).

EDRS Price - MF01/PC01 plus postage.

Document Type: Conference Paper (150); Project Description (141)

Major Descriptors: *Adult Literacy; *Computer Oriented Programs; *Educational Change; *Technological Advancement

Technology is changing the way literacy is being taught to adults, and it is also bringing new sets of problems and challenges for adult basic education programs. Some of the problems associated with the new technology include rapid changes in computers, leading to indecision in purchasing and uncertainty in use, and lack of appropriate software for adults. Other problems are not problems of technology but of literacy programs (such as turf fights and differences in philosophy), or lack of a cohesive curriculum. Many new software programs for adults are being designed, so some of the problems may be resolved in the future. The Gannett Foundation has been providing funds that may allow the development of programs in which adults have many options to learn, whether through a computer at a laboratory or in their homes, by telephone or television, or in person with a large group, a small group, or individually with a teacher.

ED295028

The Technology for Literacy Project Evaluation. A Special Report from the Donor Review Board.

Turner, Terilyn C., Ed.; Stockdill, Stacey Hueftle, Ed.

Saint Paul Foundation, St. Paul, MN.

Dec 1987, 188p.

EDRS Price - MF01/PC08 plus postage.

Document Type: Evaluative Report (142)

Major Descriptors: *Adult Literacy; *Adult Programs; *Computer Assisted Instruction; *Cost Effectiveness; *Literacy Education; *Program Effectiveness

The Technology for Literacy Center (TLC) was designed to find a new and better way to teach literacy skills to adults by using computers and other forms of technology. It served 1,300 illiterate adults in the St. Paul, Minnesota, area of Ramsey, Washington, and Dakota counties. The project had four major components: direct services, training, research, and incentive grants. A formative evaluation of the plan was conducted to identify strengths and weaknesses of the project and to correct them. A summative evaluation (detailed in this report) was conducted to assess the overall merit of the project. Data were collected through standardized achievement tests, group interviews, exit interviews, student questionnaires, learner activity logs, and case studies. The evaluation showed that the TLC has been successful and effective in meeting its mission. Some of the factors accounting for this success include the technology, leadership, a dedicated and skilled staff, evaluation, the Donor Review Board, performance orientation, attachment to the St. Paul Public Schools, a multidimensional project conceptualization, special attributes of the Technology for Literacy Center, careful planning, and a culture of learning. Issues identified for ongoing discussion included effective use of volunteers, outcome measures, staff development and stress, and funding.

ED290002
Incorporating a Computer Assisted Reading Program into an Adult Vocational Basic Skills Lab.
Vescial, Ann; And Others
Hacienda La Puente Unified School District, City of Industry, CA. 1987, 33p.
Document Type: Project Description (141)
Major Descriptors: *Adult Education; *Adult Reading Programs; *Computer Assisted Instruction; *Reading Improvement; *Vocational English (Second Language)

A computer-assisted reading program was implemented in the VESL (Vocational English as a Second Language) Center at Hacienda La Puente Adult Schools (California), which provides support services to adult special needs vocational students. The purpose of the program was to improve the technical reading skills of the vocational students. The basic programs were Educational Activities' Core, Diascriptive Reading, LEAP (Language Experience Approach), and Milliken's Comprehension Power. Fifty students were tracked over a six-month period. Over 150 students were also tested during the study period. Auto mechanics, auto body, and welding students spent the most hours on the computer, spent the most computer instruction time, and were assigned more Lab/VESL time. During the six-month period the 50 students had an average improvement of two years. (Appendixes include a bibliography of most of the materials used in the lab and a bibliography related to computer-assisted instruction. The bibliographies address the needs of both disadvantaged native speakers and limited English proficient students. Some figures showing study results are also appended.)

ED286062
Computer Assisted Learning in Basic Adult Education. Commissioned Research.
Wilson, R.; Hooper, P.
TAFE National Centre for Research and Development, Payneham (Australia).
Dec 1986, 14p. Appendix containing survey data is not included in this document.
Available from: Nelson Wadsworth, P.O. Box 4725, Melbourne, Victoria, 3001, Australia.
EDRS Price - MF01/PC01 plus postage.
Document Type: Project Description (141)
Major Descriptors: *Adult Education; *Computer Assisted Instruction; *Directories; *Information Networks; *Material Development; *Microcomputers

A project was conducted to increase the use of microcomputers in basic adult education in Australia. The aims of the project were as follows: to establish an information network of practitioners working within Australia's Technical and Further Education (TAFE) system who have an interest in using computer-assisted learning in basic adult education; to collate a human resources directory and a register of computer hardware and software materials presently in use at TAFE institutions throughout Australia; to prepare and disseminate an information bulletin/newsletter that would assist practitioners in using computer-assisted learning in basic adult education; and to select and evaluate computer software packages presently in use in basic adult education throughout Australia. After having accomplished the first two project objectives, the project team developed the following recommendations for staff and students involved in basic adult education programs into which computer-assisted learning is being introduced: teachers and learners should spend time becoming familiar with the particular hardware being used; program managers should be sure that stand-alone packages are purchased along with hardware; authoring packages should only be considered if extensive teacher inservice and student workshops are provided; and managers should be prepared to make additional resources available to system operators once they have become well advanced.

Disabled Learners

ED296514
Barking Books? The Microcomputer in Special Education Language Arts Programs of the Future.
Candler, Ann C.; Keefe, Charlotte Hendrick
Nov 1987, 16p. Paper presented at the Council for Exceptional Children's Topical Conference on the Future of Special Education (Orlando, FL, November 15-17, 1987).
EDRS Price - MF01/PC01 plus postage.

Document Type: Non-Classroom Material (055); Directory (132); Conference Paper (150)

Major Descriptors: *Disabilities; *Language Arts; *Microcomputers; *Special Education; *Teaching Methods; *Word Processing

The use of microcomputers in language arts instruction with exceptional students can be an effective tool for both teaching and reinforcing skills, but is not typically employed as an integral part of the overall language arts curriculum. Research studies substantiate the positive impact on student performance when microcomputers are effectively integrated into the instructional process. An especially useful application of microcomputers in language arts is in the area of word processing. Available programs include those offering just word processing ("Magic Slate," "Miliken," "Quill," and "Writing Wizard"), those offering word processing and graphics ("Bank Street StoryBook," "Kidwriter," and "Story Maker") and those offering word processing and speech ("Talking Text Writer" and "Language Experience Recorder"). The future of microcomputers in education will be directed by three major factors: application of educational theory, expansion of the awareness of educators, and utilization of problem solving.

ED296498

Critical Issues for Low Incidence Populations. Proceedings of the CEC Symposium on the Education of Children with Low Incidence Handicapping Conditions (Atlanta, Georgia, September 18-20, 1986). An ERIC Exceptional Child Education Report.

Connor, Frances P., Ed.

Council for Exceptional Children, Reston, Va.; ERIC Clearinghouse on Handicapped and Gifted Children, Reston, Va.

1987, 107p.

Report No.: ISBN-0-86586-177-3

Available from: Council for Exceptional Children, Publication Sales, 1920 Association Dr., Reston, VA 22091 ($10.00, $8.50 member price; Stock No. B360).

EDRS Price - MF01/PC05 plus postage.

Document Type: Conference Proceedings (021); ERIC Product (071)

Major Descriptors: *Assistive Devices (for Disabled); *Child Advocacy; *Computer Uses in Education; *Special Health Problems; *Visual Impairments

Proceedings of a 1986 symposium on the education of children with low incidence handicapping conditions focus on medically fragile children, advocacy, and technology. R. Dwain Blackston enumerates conditions affecting medically fragile children, family needs and stresses, and guidelines for effective family-staff relationships. Responses by Frances P. Connor and Barbara Sirvis discuss related factors affecting educational programming, including teacher competence and management problems in the school setting. Frederick J. Weintraub, in "Action Agenda to Improve the Education of Low Incidence Handicapped Children," elaborates on such policy issues as a lifelong continuum of educational opportunities and quality of education. Responses by June Mullins and Anne L. Corn address the limits of educational responsibility by special education teachers and issues of special concern to teachers of blind and low vision children. Lawrence A. Scadden describes the impact of technology on visually impaired children and youth, while Gail McGregor focuses on the use of technology in educational programs for multiply handicapped students. A response by Samuel Ashcroft notes the need to reduce the gap between the state of the art and the status of educational practice in the use of technology. A concluding statement by Vivian Correa summarizes the professional contributions of the symposium.

ED285376

The Second Beginner's Guide to Personal Computers for the Blind and Visually Impaired. 2nd Edition.

Croft, Diane L., Ed.

1987, 133p.

Report No.: ISBN-0-939173-09-3

Available from: National Braille Press, Inc., 88 St. Stephen St., Boston, MA 02115 ($14.00 print, includes postage—ISBN-0-939173-09-3; $11.00 Braille—ISBN-0-939173-10-7; cassette—ISBN-0-939173-11-5; Braille and cassette copies shipped free matter for the blind).

EDRS Price - MF01 plus postage. PC not available from EDRS.

Document Type: Directory (132); Non-Classroom Material (055)

Major Descriptors: *Blindness; *Computer Software; *Sensory Aids; *Speech

The guide updates one section of a previously written manual on speech software for blind and visually impaired persons. The guide presents reviews of 14 specific commercially available software programs. Software is critiqued for IBM (Enhanced PC Talking Program, Soft Vert, Screen-Talk Pro, Artic Vision, Freedom 1, and Prompt-Writer), Apple (ProWORDS, BEX, TEXTALKER, WORD-TALK, ProTERM, FILE-TALK and SlotBuster II), and Commodore (64 Reader). The guide also mentions such programs as Rapsheet, Sensible Speller, and Apple Presents Apple. A list of magazines for and by blind computer users is also provided.

ED287259

Selecting Software for Special Education Instruction. Digest #439.

Elting, Susan; Eisenbarth, Janet

ERIC Clearinghouse on Handicapped and Gifted Children, Reston, Va.

1986, 3p.

Available from: ERIC Clearinghouse on Handicapped and Gifted Children, 1920 Association Dr., Reston, VA 22091 (4 titles free, $1.00 for each additional set of 4 titles).

EDRS Price - MF01/PC01 plus postage.

Document Type: ERIC Product (071); ERIC Digests (Selected) (073)

Major Descriptors: *Computer Software; Computer Uses in Education; *Courseware; *Disabilities; *Media Selection

The process of selecting software for use with exceptional students focuses on two major issues: (1) how computers are to be used in the instructional process, and (2) whether the product selected is consistent with curricular goals. The content of instruction is shaped by its purpose: drill and practice; teaching new skills, concepts, and processes (tutorials); or problem-solving (e.g., educational games and simulations). Drill and practice courseware comprises over half of all software used in schools. Determining consistency with curricular goals is approached through collecting product information from outside sources (e.g., courseware reviews by educators) and through an internal evaluation of individual courseware packages by the school or district. Both instructional and technical features should be examined. Selected references and sources of software reviews and products are included in this brief information digest.

ED295152

Instructional Software for Exceptional Students: Language Arts. Secondary Education.

Florida State Dept. of Education, Tallahassee. Bureau of Education for Exceptional Students.

Aug 1987, 150p. A product of the Florida Diagnostic & Learning Resources Resources System. For related document, see ED 295 151.

EDRS Price - MF01/PC06 plus postage.

Document Type: Non-Classroom Material (055)

Major Descriptors: *Computer Software Reviews; *Language Arts

This comprehensive collection of information about software programs is intended to help secondary language arts teachers choose software to supplement their instruction of mildly handicapped students. The first section is a correlations matrix, which lists all software programs abstracted, indicates computer compatibility, and correlates each title by course and by learning outcome to the curriculum frameworks developed by the Florida State Department of Education. The second section is comprised of single page abstracts for each of the software titles. The abstracts are arranged alphabetically by program title. Each abstract includes the following information: program name, publisher/address, copyright, price, computer type(s), required equipment, optional equipment, descriptors, educational level, annotation, comments, and other reviews. Presented in the eight appendixes are listings of software titles, publishers, review sources, criteria for inclusion of software, curriculum frameworks for exceptional student education courses, workscope and contact list, resource evaluation form, and a software abstract form.

ED292252

Special Education Teacher Computer Literacy Training. Project STEEL. A Special Project To Develop and Implement a Computer-Based Special Teacher Education and Evaluation Laboratory. Volume II. Final Report.

Frick, Theodore W.; And Others

Indiana Univ., Bloomington. Center for Innovation in Teaching the Handicapped.

30 Dec 1986, 246p. For related documents, see ED 292 250-254.

EDRS Price - MF01/PC10 plus postage.

Document Type: Project Description (141)

Major Descriptors: *Computer Literacy; *Computer Uses in Education; *Disabilities; *Special Education Teachers; *Teacher Education

The document is part of the final report on Project STEEL (Special Teacher Education and Evaluation Laboratory) intended to extend the utilization of technology in the training of preservice special education teachers. This volume focuses on the second of four project objectives, the development of a special education teacher computer literacy training package. The training program is a multi-media (lecture/print/transparency material) flexible curriculum in eight modules stressing current microcomputer technology and potential classroom applications. The major portion of the document consists of the training curriculum with modules on: introduction to microcomputers (history of computers and structure and operation); software applications (examples of uses in math, reading, spelling, and readability determination); introduction to word processing (educational and classroom uses of word processing); evaluation of educational software; introduction to authoring systems; BASIC programming; resource materials; and conclusions regarding microcomputer applications in special education. Also included are results of course evaluations during the three years of the course development and modification.

ED292258
Special Education Curriculum (Computerized IEP Catalog).
Garland Independent School District, TX.
Sep 1986, 1,202p.
EDRS Price - MF09/PC49 plus postage.
Document Type: Non-Classroom Material (055)
Major Descriptors: *Computer Managed Instruction; *Curriculum; *Disabilities ; *Individualized Education Programs; *Special Education; *Student Educational Objectives

This special education curriculum, developed by the Garland (Texas) Independent School District, outlines the basic tools for preparing an Individual Educational Plan (IEP) for each handicapped student. The curricular information is organized and coded to facilitate computerized printing of the IEP. The document begins with a list of 13 handicapping conditions, 20 responsible staff positions, 119 curriculum areas, and almost 1,000 suggested resources/materials, along with their computer codes. Long-term goals are provided for the areas of reading, written expression, math, spelling, early childhood, hospital/homebound, occupational/physical therapy, vision, adapted physical education, developmental instruction/life skills, preverbal, early language, language, articulation, fluency, vocational life skills, tongue thrust, voice, behavior, and maintenance of essential elements. Short-term objectives comprise the following section and are categorized as follows: social/emotional, speech and language, visually handicapped, adapted physical education, occupational/physical therapy, life skills, early childhood, elementary, secondary, and maintenance. Some of the objectives are accompanied by the codes for appropriate materials from the "Suggested Resources/Materials" list. The volume concludes with competency tests for each area.

ED289325
Computerized IEP Management Systems.
Krivacska, James J.
Mar 1987, 9p. Paper presented at the Annual Meeting of the National Association of School Psychologists (19th, New Orleans, LA, March 4-8, 1987).
EDRS Price - MF01/PC01 plus postage.
Document Type: Conference Paper (150); Project Description (141)
Major Descriptors: *Computer Managed Instruction; *Disabilities; *Individualized Education Programs; *Management Information Systems; *Microcomputers

The preparation of the Individualized Education Program (IEP) for each handicapped child is seen as cumbersome and time consuming and involves writing similar goals and objectives repetitively for different students. Utilization of a microcomputer-based IEP preparation system has a significant impact on this process and what the school psychologist needs to know about computerized systems and what questions should be asked are the focus of this paper, which describes: (1) the steps the school psychologist should take prior to searching for a computerized system; (2) selection criteria and questions; and (3) implementation issues. The advantages and disadvantages of computerized systems should be considered in a preliminary needs analysis phase. Software specifications should be clearly defined and categorized as absolutely necessary or highly desirable. Implementation issues include staff training in both general computer skills and in software use, parent involvement in the computerization process, and quality control.

ED293238
The Effects of a Computer-Assisted Instruction Program on Peer Acceptance, Teacher Acceptance, and Self-Concept of Mildly Handicapped Students.
Leles, Sam; Culliver, Concetta C.
19 Nov 1986, 30p. Paper presented at the Annual Meeting of the Mid-South Educational Research Association (15th, Memphis, TN, November 19-21, 1986).
EDRS Price - MF01/PC02 plus postage.
Document Type: Conference Paper (150); Research Report (143)
Major Descriptors: *Computer Assisted Instruction; *Mainstreaming; *Mild Disabilities; *Peer Relationship; *Self Esteem; *Teacher Student Relationship

A study was undertaken to determine the effects of a computer-assisted instruction (CAI) program on the self-concept of mainstreamed, mildly handicapped fifth-grade students (labeled learning disabled, emotionally conflicted, and educable mentally retarded) attending 13 different elementary schools in Tuscaloosa County, Alabama. A control group (N=46) and an experimental group (N=46) were identified using random selection. A literature review had revealed that while efforts to integrate mildly handicapped students into regular classrooms have increased, much evidence existed that these students are not well accepted in mainstream situations by teachers and peers. Negative self-concept appeared to play a significant role, and several researchers have investigated the potential uses of CAI for improving self-concept in learning-disabled and other handicapped students. Results of this study showed that CAI does not, in and of itself, lead to a positive self-concept in students. Only one aspect of self-concept, physical appearance and attitudes, was affected by CAI. The study confirmed the realization that instructional programs for mainstreamed, mildly handicapped students require considerably more research in order to identify how CAI might effectively influence the self-concept of such students.

ED294393
Computers in Special Education: Using Technology To Make Up the Difference.
Lindsay, Peter H.
Mar 1986, 27p. In: **The Proceedings of the Canadian Symposium on Special Education Issues (Toronto, Canada, March 4-5, 1986)**, see ED 294 387.
EDRS Price - MF01/PC02 plus postage.
Document Type: Conference Paper (150); Review Literature (070)
Major Descriptors: *Computer Uses in Education; *Disabilities; *Gifted; *Microcomputers; *Special Education; *Technology

This paper reviews the current role of microcomputers as either a cognitive or sensory prosthesis, and evaluates their potential for meeting the learning needs of exceptional students. In the area of declarative learning, computers are used for drill and practice, tutoring, and "intelligent" tutoring. In the area of procedural learning, computer-based learning environments involve computer simulation; programming languages; tools for manipulating language such as word processors and proofreading assistance programs; tools for manipulating knowledge such as database management systems; and programs that teach students how to reflect upon and begin to understand their own cognitive processes. Computers also have a unique role as a potential sensory prosthesis for hearing-impaired students, visually-impaired students and students with no voice.

ED285306
Adaptation of Instructional Materials for Use with Mainstreamed Students. Final Report.
Macro Systems, Inc., Silver Spring, Md.
Jul 1985, 76p. Appendix A of this document is also available separately, ED 285 307.
EDRS Price - MF01/PC04 plus postage.
Document Type: Project Description (141); Non-Classroom Material (055)
Major Descriptors: *Computer Assisted Instruction; *Computer Managed Instruction; *Instructional Materials; *Media Adaptation; *Mild Disabilities; *World History

The report documents a project to adapt and design instructional media and materials of a regular senior high social studies curriculum for use with mainstreamed mildly handicapped students. Supplementary materials were developed and tested at five sites to accompany the world history textbook, "Our Common Heritage." Products included the following: a series of audiocassette tape lessons with accompanying print activity sheets; a print teacher's guide to accompany the text; an electronic gradebook to assist teachers in tracking student progress in meeting textbook objectives; a world history database for teaching concepts, facts, hypothesis testing and other thinking skills; and a guidebook for textbook adaptation. The initial assessment process included a publisher's needs assessment, an author's needs assessment, and instructional needs assessment which indicated needs in such areas as thinking skills, written language skills, interpretation map and globe skills, and time and chronological skills. Among evaluation results derived from teachers were enthusiasm over the audiocassettes, approval of the print materials, interest in the computerized programs but concern about the availability of resources and training. A final section reports on marketing efforts, primarily with the publisher of the textbook. Appendix A is an extensive (16 pages), "Guide to Textbook Adaptation."

ED290300
Microcomputer-Assisted Needs Assessment System for Teacher Training in Special Education. Final Project Report, 8/1/83 through 5/31/86.
Malouf, David; And Others
Maryland Univ., College Park. Inst. for the Study of Exceptional Children and Youth.
[May] 1986, 435p.
EDRS Price - MF01/PC18 plus postage.
Document Type: Project Description (141)
Major Descriptors: *Competency Based Teacher Education; *Computer Assisted Instruction; *Disabilities; *Expert Systems; *Inservice Teacher Education; *Special Education

The report describes the features, underlying knowledge base, and goals of the "Smart Needs Assessment Program" (SNAP), an interactive, microcomputer-based system designed to provide inservice training in special education for regular education teachers. The Teacher Effectiveness Expert System portion uses teacher data concerning attitudes, goals, and background to identify teaching problems with direct instruction, questioning skills, or academic learning time. Finally, the teacher works with the Training Experience Selecting

Expert System which uses some 200 options to produce an individualized set of recommended training experiences based on the data entered earlier as well as on responses to additional questions eliciting information on student age, teaching area, availability of teachers' aides, and other factors. An evaluation of the system conducted with 18 teachers suggested that it improved attitudes toward mainstreaming and increased concerns about impact upon students, collaboration with other professionals and widening the benefits of mainstreaming. A study comparing the system's training recommendations with those made by expert trainers found the SNAP system comparable. Fourteen appendixes comprising 90 percent of the document provide technical background on the system, samples of questionnaires and forms, discussions about the design and use of expert systems, and a 50-page bibliographic chart analyzing research on effective instruction.

ED295388

Input Devices for Young Handicapped Children.

Morris, Karen

Mar 1988, 10p. Paper presented at the Annual Convention of the Council for Exceptional Children (66th, Washington, DC, March 28-April 1, 1988).

EDRS Price - MF01/PC01 plus postage.

Document Type: Conference Paper (150); Project Description (141)

Major Descriptors: *Assistive Devices (for Disabled); *Computer Peripherals; *Disabilities ; *Input Output Devices; *Keyboarding (Data Entry); *Young Children

The versatility of the computer can be expanded considerably for young handicapped children by using input devices other than the typewriter-style keyboard. Input devices appropriate for young children can be classified into four categories: alternative keyboards, contact switches, speech input devices, and cursor control devices. Described are input devices meeting the following criteria: can be used with the Apple computer, can support software appropriate for young handicapped children, have been used successfully in a computer laboratory situation with young children, fit into an acceptable price range for educational settings, have good user support from developers or distributors, are readily available, and are easily installed. Popular input devices discussed include "Muppet Learning Keys," "Power Pad," "Adaptive Firmware Card," "TouchWindo," "Voice Master," "Multi-Switch Adapter Box," and switches such as the ones from Prentke Romich Co. and Zygo Industries, Inc.

ED292261

A Review of Current Computer Software for the Development of Individualized Educational Programs.

Munger, Gail

Virginia Univ., Charlottesville.

Feb 1987, 49p. A Data-Based Decisions Project, Department of Curriculum, Instruction and Special Education.

EDRS Price - MF01/PC02 plus postage.

Document Type: Non-Classroom Material (055); Directory (132)

Major Descriptors: *Computer Managed Instruction; *Computer Software Reviews; *Database Management Systems; *Disabilities; *Individualized Education Programs; *Severe Disabilities

This paper reviews computer software designed for the development, management, and updating of Individual Educational Plans (IEPs) for disabled students. Selection criteria required that the software perform multiple tasks related to the writing of IEPs, be appropriate for use in a medium-sized school district, and be appropriate for a severely handicapped population. The software identified was most frequently available for Apple systems, followed by Radio Shack and IBM personal computers. The systems' functions include, among others: developing, organizing, storing, editing, and retrieving a data bank of goals, objectives, and resources; storing student's objectives, evaluative criteria for objectives, and strategies and materials for curricular areas; developing treatment plans, service plans, lesson plans, and curricula; cross tabulating and statistical summary capabilities; and monitoring due process and procedural safeguards. For each of the almost 60 software programs listed, the following information is provided: title, publisher's name and address, computer system the software can be used on, cost, remarks on the software's utility, and information source.

ED290259

Computer Technology/Special Education/Rehabilitation: Proceedings of the Conference (2nd, Northridge, California, October 16-18, 1986).

Murphy, Harry J., Ed.

California State Univ., Northridge. Office of Disabled Student Services.

1987, 302p. For selected individual papers, see ED 290 260-272. For the 1985 Proceedings document, see ED 276 233.

Available from: California State University Foundation, Office of Disabled Student Services, 18111 Nordhoff St., Northridge, CA 91330 ($14.95; California residents enclose $15.92).

EDRS Price - MF01/PC13 plus postage.
Document Type: Conference Proceedings (021); Project Description (141)
Major Descriptors: *Computer Uses in Education; *Disabilities; *Rehabilitation; *Special Education

The following 25 papers (with their authors) are presented from a conference on computer technology in special education and rehabilitation: "Computers for Business—Computers for Life" (I. Keith Austin); "Rehabilitation and the Computer: How to Find What You Need" (Thomas Backer); "Computer Access Alternatives for Visually Impaired People in Employment Situations" (James Bliss); "Interactive Video Instruction for Hearing Impaired Students" (Daniel Campbell); "Laserdisc Technology in the Classroom" (Kim Creighton); "Telecommunications: A New Horizon for the Handicapped" (Pat Cunningham and Joan Gose); "Developing a Writing Lab for Older Disabled Students: Beyond Bank Street" (Farah Fisher); "Reducing the Anxiety in Computer Training" (Farah Fisher); "The Computer Access Project: A Program Model for Vocational Training and Placement for Individuals with Moderate to Severe Cerebral Palsy" (Susan Fleischmann); "Computer Use as a Tool in Vocational Preparation and Adult Basic Educational Curriculums" (Marguerite Harmon and Matthew Frantz); "Computer Aptitude: Learning Disabled versus Non-Learning Disabled Junior High School Students" (J. Dixon Hearne, et al); "Social Skills Development and Microcomputer Use for Handicapped Adolescents" (Marie Hegwer, et al); "Standard Software for Our Not-So-Standard Hardware" (Tim Hendtlass); "Give Me Tools and I Will Do the Job" (Arthur Heyer); "Tactile Graphic Braille Display" (David Jaffe); "Adaptive Positioning" (Dennis Kviz); "Software for the Atypical and Severely Handicapped Student" (Jude Levine); "Low Cost High Tech: People, Equipment, and Money Resources" (Aimee Luebben); "Software Analysis for Educational and Clinical Utilization" (Aimee Luebben); "Contemporary Applications of Computer Technology: Development of Meaningful Software in Special Education/Rehabilitation" (Russell Mills); "An Interactive Videodisc-Computer Language Program" (R. Scott Osksa); "The Sonoma Voice: An Inexpensive VOCA" (Bob Russell); "The Importance of Keyboarding Skills in Computer Usage with the Handicapped" (Thomas Saka); "Adapting Microcomputers for Special Needs Adults at Pearson Hospital" (Edward Summers, et al); "The Child with Attention Deficit Disorder: Finding a Safe Place to Learn Problem Solving" (Cynthia Terwilliger).

ED295351

Meeting the Needs of Rural Special Education in the Information Age: Using TI-IN Network's Interactive Satellite Based Educational Network.

Pease, Pamela S.; Kitchen, Lillian

Mar 1987, 14p. In: **Linking Programs and Resources for Rural Special Education. Proceedings of the Annual National Conference of the American Council on Rural Special Education**; see ED 295 347.
EDRS Price - MF01/PC01 plus postage.
Document Type: Conference Paper (150); Project Description (141)
Major Descriptors: *Communications Satellites; *Disabilities; *Gifted; *Information Networks; *Rural Education; *Telecourses

The TI-IN Network is an interactive, satellite-based educational system offering a technological alternative to face-to-face classroom instruction. Developed through a cooperative venture between private enterprise and public education agencies, the TI-IN Network offers a total systems approach by providing the entire programming and hardware package to the user. Curriculum offerings include inservice training for teachers/staff, high school academic courses, student enrichment programming, and tutorials. An evaluation by the Texas Education Agency showed that there was no significant difference between students' performance in a TI-IN classroom and a face-to-face classroom. Another evaluation project being designed by TI-IN will compare baseline data with subsequent data and will analyze the motivations for use and the expectations accompanying use of this technology. TI-IN Network is involved in two projects targeted for special education high school students: (1) Project Help, which implemented system modifications to allow forms of response other than talkback, such as tactile pads, voice recognition machines, etc.; and (2) The Mathematics Magnet School of the Air, which instructs gifted and talented secondary students on higher order thinking skills.

ED286305

Applications of Microcomputers in Early Childhood Special Education.

Rettig, Michael

21 Apr 1987, 17p. Paper presented at the Annual Convention of the Council for Exceptional Children (65th, Chicago, IL, April 20-24, 1987).
EDRS Price - MF01/PC01 plus postage.
Document Type: Conference Paper (150); Review Literature (070); Position Paper (120)
Major Descriptors: *Accessibility (for Disabled); *Computer Assisted Instruction; *Computers; *Computer Software; *Disabilities; *Early Childhood Education

Research on the use of computers with young handicapped children is summarized. Much of the literature on the topic, it is noted, is speculative; few students are technically sound. Findings are briefly reviewed in terms of the amount of time spent using the computer, social and free play choices, software selection preferences, amount of teacher assistance required, and computer access considerations. An examination of existing software suggests that the majority of the programs use the keyboard as a primary means of response, a level of skill that many young handicapped children do not possess and that many programs have been developed without an adequate research base. Access considerations are also covered, and a procedure for assessing a child's computer abilities outlined in six steps is described. The importance of examining a child's skills—both physical and cognitive—is emphasized in determining if access to the use of computers will be beneficial.

ED289081

Computers for the Disabled. Proceedings of the Discovery '83 Conference (Minneapolis, Minnesota, September 12-14, 1983).

Roehl, Janet E., Ed.

Wisconsin Univ.-Stout, Menomonie. Stout Vocational Rehabilitation Inst.

1984, 177p.

Available from: Materials Development Center, Stout Vocational Rehabilitation Institute, University of Wisconsin-Stout, Menomonie, WI 54751.

EDRS Price - MF01/PC08 plus postage.

Document Type: Conference Proceedings (021); Research Report (143); Project Description (141)

Major Descriptors: *Computer Assisted Instruction; *Computer Oriented Programs; *Disabilities; *Microcomputers; *Special Education; *Vocational Rehabilitation

These proceedings provide 30 papers from a conference to highlight a frontier area in serving the disabled—microcomputers—which blends two disciplines, vocational rehabilitation and special education. Keynote addresses are "High Tech/High Touch: Making Good on the Promise" (Fenderson); "Curbcuts and Computers: Providing Access to Computers and Information Systems for Disabled Individuals" (Vanderheiden); and "The Person with Disability and the Benefits of the Microcomputers Revolution" (Shworles). Conference papers are "Computers: A Touchy Topic for the Handicapped and Nonhandicapped" (Battenberg); "But It Will Be Obsolete Tomorrow: Evaluating Ultimate Needs of Users vs. the Capabilities of Devices" (Behrmann, Lahm); "The Use of Computers in Rehabilitation Facilities" (Blakemore, McCray); "Microcomputers and Employment for the Disabled: The CHPI Experience" (Boyer); "Overuse of Sound Effects in a Microcomputer Program and Its Impact on the Performance of Students with Learning Disabilities" (Chiang); "Computers in Rehabilitation: Another Way" (Cole); "Computers for the Disabled: A Contradiction in Terms?" (DeWitt); "Adapting Computer Equipment for Handicapped Children: A Review of Current Strategies and a Report of a Project" (Desch); "Integrating CAI with Traditional Instruction in the Elementary Classrooms" (Farrell); "Direct Optical Head-pointing Input to Standard Computers Using a TV Screen Based Keyboard" (Gunderson, Vanderheiden); "A Coordinated System Approach" (Hallett); "Operations and Specifications of the Lip-Reader Trainer" (Hight); and "Braille-Edit: A Versatile Tool for the Blind and Sighted" (Holladay); "An Electronic Blackboard for a Blind Teacher" (Holladay); "Speech Recognition for Inter-human and Human-Machine Communications" (Horn); "High Technology and the Handicapped: Vocational Implications" (Leneway); "Helen Keller, Me, and You" (Mann); "Using the Computer in the Special Education Classroom: The Possibilities and the Courseware" (Manning); "The Center for Independent Living of Greater Bridgeport: Computerized Coordinated Service Center" (Martin); "Tactile Graphics Display" (Maure); "VersaBraille Applications in Education" (Moore); "Applications of Microcomputer Technology in a Comprehensive Rehabilitation Center" (Rizer); "The Connecticut Special Education Microcomputer Software Evaluation Project" (Rucker, Archambault); "The Executive Secretary Word Processing System: An Aid to Those Servicing the Disabled" (Seaton); "A Voiced Controlled Personal Computer System with Word Processing Capabilities for the Severely Physically Handicapped" (Serota); "Vocational Education Curriculum Adaptation to Appropriate Language Level" (Simon, Adolphson); and "Logo: LD Students Explore Their Intellectual Potential with a Computer" (Sopp).

ED286315

Discovery '84: Technology for Disabled Persons. Conference Papers (Chicago, Illinois, October 1-3, 1984).

Smith, Christopher, Ed.

Wisconsin Univ.-Stout, Menomonie. Stout Vocational Rehabilitation Inst.

1985, 264p. For selected individual papers, see ED 286 316-332 and ED 248 480.

Report No.: ISBN-916671-61-5

EDRS Price - MF01/PC11 plus postage.

Document Type: Conference Proceedings (021)

Major Descriptors: *Communication Aids (for Disabled); *Computers; *Disabilities; *Rehabilitation; *Technological Advancement; *Technology

Thirty-nine papers from the conference "Discovery '84: Technology for Disabled Persons" are presented. The conference was intended to provide an overview of the areas in which technological advances have been made, including the applications of computers and other related products and services. Conference presenters represented fields of education, counseling, special education, vocational rehabilitation, and computer science. The papers in the current volume address topics dealing with various ways in which computer technology can enhance the lives of the handicapped and disabled, biomedicine (including a paper on biomedical techniques for post head trauma victims), environmental control (including issues such as the management of incontinence), transportation issues such as a functional urban paratransit system, and communication issues such as a communication system for nonvocal physically impaired persons.

ED292262

Some Ideas for Wordprocessing in Special Education.

Suffolk County Board of Cooperative Educational Services 2, Patchogue, N.Y.

15 Jan 1987, 24p. Compiled by the BOCES II, Special Education Division, Microcomputers Resource Center, Centereach, NY. Paper presented at the National Council for Exceptional Children Conference on Effective Utilization of Technology (2nd, Alexandria, VA, January 15, 1987).

EDRS Price - MF01/PC01 plus postage.

Document Type: Non-Classroom Material (055); Conference Paper (150)

Major Descriptors: *Computer Uses in Education; *Disabilities; *Teaching Methods; *Word Processing; *Writing (Composition); *Writing Exercises

This guide provides a collection of ideas for word processing activities that teachers have found to be useful in special education classes. The guide begins with a list of 41 computer skills, the grade levels at which the skills are usually introduced (from kindergarten to secondary levels), and provides names of commercial programs which may be useful in teaching the skills. The list is cross-referenced to a subsequent section of activities. Activities in the areas of keyboard familiarity, sentence writing, paragraph and story writing, fun skills, editing, and creative composition are briefly described. The guide concludes with a directory containing descriptions and addresses of the commercial word processing programs mentioned.

ED289314

Curbcuts and Computers: Providing Access to Computers and Information Systems for Disabled Individuals.

Vanderheiden, Gregg C.

Wisconsin Univ., Madison. Trace Center.

12 Sep 1983, 8p. A product of the Trace Research and Development Center on Communication, Control, and Computer Access for Handicapped Individuals. Excerpted from Keynote speech presented at Computers for the Disabled sponsored by the Office of Continuing Education, University of Wisconsin-Stout, Closing the Gap at the Indiana Governor's Conference on the Handicapped (October 13, 1983). For related documents, see ED 289 310-319.

Available from: Trace Center, University of Wisconsin-Madison, Waisman Center, 1500 Highland Ave., Madison, WI 53705-2280 ($1.10).

EDRS Price - MF01/PC01 plus postage.

Document Type: Position Paper (120); Conference Paper (150)

Major Descriptors: *Accessibility (for Disabled); *Assistive Devices (for Disabled); *Computers; *Disabilities; *Information Processing

Computers have been widening the gap between disabled and able-bodied people, because computers are extending the capabilities of non-handicapped individuals at a greater rate than for the handicapped. Access to standard computers and standard software must be provided to handicapped individuals by either modifying the software, which is prohibitively expensive, or by providing transparent access via a keyboard emulator or tactile and voice devices. The analogy of building sidewalks and not including curbcuts is used to describe the situation of advancing technology failing to include access points for the handicapped.

ED289317

Guidelines for the Design of Computers and Information Processing Systems to Increase Their Access by Persons with Disabilities. Version 2.0.

Vanderheiden, Gregg C.; Lee, Charles C.

Wisconsin Univ., Madison. Trace Center.

Apr 1986, 54p. A product of the Guidelines Task Force of the Government-Industry Initiative on Access to Computer Systems by Disabled Persons. Charts may not reproduce. For related documents, see ED 289 310-319.

Available from: Trace Center, University of Wisconsin-Madison, Waisman Center, 1500 Highland Ave., Madison, WI 53705-2280 ($7.40).

EDRS Price - MF01/PC03 plus postage.

Document Type: Project Description (141)

Major Descriptors: *Accessibility (for Disabled); *Assistive Devices (for Disabled); *Communication Aids (for Disabled); *Computers; *Design Requirements; *Disabilities

Many low-cost and no-cost modifications to computers would greatly increase the number of disabled individuals who could use standard computers without requiring custom modifications, and would increase the ability to attach special input and output systems. The purpose of the Guidelines is to provide an awareness of these access problems and a focal point for listing possible solutions. Section I provides an overview of disability types and the major impacts that each disability has on computer use. Section II contains a listing of problem areas and possible solutions, arranged by the part of the computer involved, including operating systems, keyboards, display screens, other output devices, mechanical design, and documentation. The Executive Summary contains a chart summarizing the problems, the populations affected, a relative priority, possible solution strategies, and the impact/benefit of such adaptations or modifications on/to the mass market for the computer. A summary listing of design ideas is presented in three categories: design features to increase the number of people who can use an unmodified computer; design features to facilitate the connection of special accessories or programs needed by more severely involved persons; and to design features to facilitate the use of computers as special devices, such as portable communication aids.

ED289310

Practical Application of Microcomputers To Aid the Handicapped.

Vanderheiden, Gregg C.

Wisconsin Univ., Madison. Trace Center.

Computer, Jan 1981

10p. A product of the Trace Research and Development Center on Communication, Control, and Computer Access for Handicapped Individuals. For related documents, see ED 201 272-280.

Available from: Trace Center, University of Wisconsin-Madison, Waisman Center, 1500 Highland Ave., Madison, WI 53705-2280 ($1.10).

EDRS Price - MF01/PC01 plus postage.

Document Type: Project Description (141); Journal Article (080)

Major Descriptors: *Assistive Devices (for Disabled); *Disabilities; *Microcomputers; *Rehabilitation

The paper focuses on the development of relatively low-cost microcomputers, which provide a potentially powerful tool for the rehabilitation field. The paper discusses such areas of application as sensory enhancement/translation, manipulator controls, information amplification, special control interfaces to other devices, recreation and development aids, educational aids, communication aids, cognitive and language processing assistance, information resource/management, security/monitoring systems, and so on. Three approaches to providing aids to the handicapped are discussed: commercially available aids, custom-built aids, and modified standard systems. Barriers to more extensive use of microcomputers in rehabilitation are cited, and approaches to the problems of multilevel and multitasking processing are examined.

ED285319

Administrative Guidelines for the Implementation of Technology in Special Education.

White, Linda Rice

Council for Exceptional Children, Reston, Va.; ERIC Clearinghouse on Handicapped and Gifted Children, Reston, Va.

1987, 56p.

Report No.: ISBN-0-86586-173-0

Available from: Council for Exceptional Children, Publication Sales, 1920 Association Dr., Reston, VA 20091 ($11.70, $9.95 member price; Stock No. 319).

EDRS Price - MF01/PC03 plus postage.

Document Type: Non-Classroom Material (055); ERIC Product (071)

Major Descriptors: *Computer Assisted Instruction; *Computers; *Disabilities; *Educational Technology; *Program Implementation; *Special Education

Targeted at special education administrators who are involved in making decisions regarding the use of microcomputers in instructional programs for handicapped students, this document offers guidelines which synthesize relevant data on computer technology in special education and provide a framework for implementing classroom use of the microcomputer. Thirteen guidelines are presented in the sequential order in which critical issues should be reviewed in the context of an implementation plan, with the first three being of a general nature, creating a framework for incorporating the others. The guidelines are: (1) initial planning; (2) preparing for the computer's integration into the curriculum; (3) developing a comprehensive implementation plan; (4) reviewing software issues; (5) reviewing assistive device issues; (6) reviewing hardware issues; (7) providing the personnel to deliver the plan; (8) preparing staff to implement the plan; (9) assuring the plan's inclusion in the school system's operating plan; (10) evaluating implementation effectiveness and making adjustments; (11) sharing implementation resources and progress within the school system; (12) staying current with technological trends and research outside the school system; (13) encouraging active participation. Major recommendations are identified at the beginning of each section, followed by a detailed narrative. A summary, list of national resources, and suggested readings conclude the document.

ED289316

Quick Information Sheets.

Wisconsin Univ., Madison. Trace Center.

1986, 85p. A product of the Trace Research and Development Center on Communication, Control, and Computer Access for Handicapped Individuals. For related documents, see ED 289 310-319.

Available from: Trace Center, University of Wisconsin-Madison, Waisman Center, 1500 Highland Ave., Madison, WI 53705-2280 ($5.00).

EDRS Price - MF01/PC04 plus postage.

Document Type: Non-Classroom Material (055); Directory (132)

Major Descriptors: *Accessibility (for Disabled); *Assistive Devices (for Disabled); *Communication Aids (for Disabled); *Computers; *Disabilities; *Information Sources

This compilation of "Trace Quick Sheets" provides descriptions, prices, and ordering information for products and services that assist with communication, control, and computer access for disabled individuals. Product descriptions or product sources are included for: adaptive toys and toy modifications; head pointers, light pointers, and mouthsticks; keyboard modification programs; keyguards; electronic communication aids; telecommunication devices for the deaf; switches and controls; optical character recognition scanners; portable battery-operated printers; portable typewriters; software resources; speech input systems; speech output computer programs for communication; and speech synthesizers. A general directory of books, pamphlets, catalogs, journals, newsletters, companies, and organizations is provided in the Quick Sheet titled "Additional Resources." Other Quick Sheets focus on: associations/advocacy groups/self-help groups, computer access for the blind and visually impaired, computer assessment/training programs, selected information resources for the deaf, networks/bulletin boards/databases, newsletters and journals, training programs in technology in special education, and a selected bibliography of videotapes on augmentative communication and computer access for the handicapped.

Learning Disabled

ED289697

Using Microcomputers To Help Learning Disabled Student with Arithmetic Difficulties.

Brevil, Margarette

1987, 9p.

EDRS Price - MF01/PC01 plus postage.

Document Type: Position Paper (120); Project Description (141)

Major Descriptors: *Arithmetic; *Computer Assisted Instruction; *Computer Uses in Education; *Elementary School Mathematics; *Learning Disabilities; *Mathematics Instruction

The use of microcomputers to help the learning disabled increase their arithmetic skills is examined. The microcomputer should be used to aid the learning disabled student to practice the concepts taught by the teacher. Computer-aided instruction such as drill and practice may help the learning disabled student because it gives immediate feedback and repeats questions and problems without any pressure. The microcomputer provides visual, auditory and kinesthetic stimuli to help the learning disabled student learn best. The Special Education teacher can also benefit from the microcomputer by learning to do programming. The microcomputer can be used as another tool to help deliver the appropriate educational needs of the learning disabled, but it should not be the only tool.

ED296568

Improving the Perceptual Performance of Learning Disabled Second Graders through Computer Assisted Instruction.

Burke, James P.

1988, 73p. Ed.D. Practicum I Report, Nova University.

EDRS Price - MF01/PC03 plus postage.

Document Type: Conference Paper (150); Project Description (141); Practicum Paper (043)

Major Descriptors: *Behavioral Objectives; *Computer Assisted Instruction; *Learning Disabilities; *Perceptual Development; *Program Effectiveness

The practicum designed a perceptual activities program for learning disabled second graders using computer-assisted instruction. The program develops skills involving visual motor coordination, figure-ground differentiation, form constancy, position in space, and spatial relationships. Five behavioral objectives for each developmental area were identified. Concepts developed by the program included direction, geometric design identification, reinforcement of keyboard dexterity, counting, mixed colors (hues), and upper and lower case letter identification and sequencing. Performance of the 10 students was evaluated before and after the program with the Marianne Frostig Developmental Test of Visual Perception. Eight of the students improved their perceptual quotient scores by at least five points.

ED285315

The Word Processor as a Tool for the Learning Disabled Student.

Candler, Ann C.; Keefe, Charlotte Hendrick

Apr 1987, 19p. Paper presented at the Annual Convention of the Council for Exceptional Children (65th, Chicago, IL, April 20-24, 1987).

EDRS Price - MF01/PC01 plus postage.

Document Type: Conference Paper (150); Project Description (141)

Major Descriptors: *Computer Software; *Educational Media; *Learning Disabilities; *Word Processing; *Writing Instruction

The paper reviews the advantages and disadvantages of using word processing programs with learning disabled students, describes some available programs, delineates criteria for selection of word processing programs, and considers expanded uses of word processing with this population. Advantages of word processing programs for learning disabled students include helping them with written document preparation, editing, and revision. Word processing programs may present a disadvantage in that writers may look better without actually improving their writing skills. Among word processing programs recommended for learning disabled students are Bank Street Writer, Talking Screen Textwriting Program, Quill, and Magic Slate. For any word processing program to be effective, it must be matched with the individual student's needs and capabilities. Future uses of word processors by learning disabled students may include reading (conversion of print into speech for the nonreader), writing from oral dictation, social skills development, and more comprehensive student evaluation.

ED293273

A Computer-Aided Writing Program for Learning Disabled Adolescents.

Fais, Laurie; Wanderman, Richard

[1987], 28p.

EDRS Price - MF01/PC02 plus postage.

Document Type: Project Description (141); Evaluative Report (142)

Major Descriptors: *Computer Uses in Education; *Expressive Language; *Learning Disabilities; *Receptive Language; *Word Processing; *Writing Instruction

The paper describes the application of a computer-assisted writing program in a special high school for learning disabled and dyslexic students and reports on a study of the program's effectiveness. Particular advantages of the Macintosh Computer for such a program are identified including use of the mouse pointing tool, graphic icons to identify available options, menus, windows, the high resolution screen, and standardization of software applications. The study evaluated use of the computer with 27 students who spent one class session a week in the Computer Aided Writing Project. Comparison of pre-testing (September) and post-testing (May) showed mixed results. Further analysis of results indicated a distinction between active/expressive tests or tests couched in the context of a full paragraph, and passive/receptive tests or tests of tasks isolated from context. All the improvements students made were in the active, paragraph-size tasks: organizing specifics into paragraph form, proofreading, writing/grammar, and speaking/grammar. Students' performance on tasks isolated from paragraph context (crossing out unrelated specifics in lists, categorizing/outlining items in lists) and the receptive tests of reading/grammar and listening/grammar showed no improvement and in some cases showed some loss. Teacher observations tended to be positive.

ED285378

Accuracy of Class.LD2: An Expert System for Classifying Learning Disabled Students.

Martindale, Elizabeth S.; And Others

1986, 34p.

EDRS Price - MF01/PC02 plus postage.

Document Type: Evaluative Report (142)

Major Descriptors: *Classification; *Computer Uses in Education; *Eligibility; *Expert Systems; *Learning Disabilities; *Student Placement

The study evaluated the accuracy of Class.LD2, a computerized expert system for classifying learning disabled (LD) students. Of 264 student files, 78 files were chosen based on disagreement between multidisciplinary team and Class.LD2 decisions regarding eligibility for LD placement. These 78 cases were evaluated by three individuals expert in LD classification, who made an eligibility decision for each case. Analysis of the results indicated that: (1) Class.LD2 was in agreement with the experts more often than were the placement teams; (2) the expert system's decisions were significantly correlated with those of the experts; and (3) in those cases in which the experts were in unanimous disagreement with Class.LD2, it was shown that Class.LD2 conformed strictly to state rules and regulations in making its eligibility decisions. The use of Class.LD2 by placement teams in order to encourage more data based decisions and to limit overclassification errors is also discussed.

ED285565

The Use of Computers in Text Research: Some Reflections on a Seminar.

Wager, Walter

Feb 1987, 10p. Paper presented at the Annual Convention of the Association for Educational Communications and Technology (Atlanta, GA, February 26-March 1, 1987). For the complete proceedings, see IR 012 723.

EDRS Price - MF01/PC01 plus postage.

Document Type: Review Literature (070); Conference Paper (150)

Major Descriptors: *Authoring Aids (Programing); *Computer Assisted Instruction; *Instructional Design; *Media Research; *Schemata (Cognition)

Issues and procedures for applying computers to the study of learning from text are discussed in this paper, which notes the advantages and disadvantages of using authoring aids to develop instructional programs, and examines the implications of schema theory for designing effective computer screen displays based on research on text learning. Several variables affecting the memory of facts and principles in text learning are also discussed: organization, level of vocabulary, size of text, illustrations, advance organizers, cues, and objectives. Schema theory and its relevance to the design of textual materials is described, and it is suggested that this theory might offer insights into alternative materials design for the learning handicapped child. Sixteen references are listed.

Preschool Education

ED288621

Is There a Role for Computers in Early Childhood Programs: A Naturalistic Study.

Byrd, David; And Others

Feb 1987, 15p. Paper presented at the Annual Meeting of the Association of Teacher Educators (Houston, TX, February 14-18, 1987).

EDRS Price - MF01/PC01 plus postage.

Document Type: Research Report (143); Conference Paper (150)

Major Descriptors: *Computer Uses in Education; *Learning Centers (Classroom); *Preschool Children; *Student Behavior; *Teacher Role

A naturalistic study of the use of computers in a preschool program suggested that a role for the computer in early childhood education exists, but it may not be the role that critics and advocates have envisioned. Phase 1 of the study investigated young children's interactions with computer software, peers working at computers, and teachers. Subjects were six preschool children whose interactions were videotaped during five 1-hour sessions during which they chose software and duration of computer involvement. Findings indicated that children differed in types of software they enjoyed, ways they interacted with the computer, amount of teacher help they required, and discussions with peers. Enjoyment and teacher support were key factors in children's continued computer use. When, in Phase 2, a computer learning center was introduced into a preschool classroom containing 25 children and 7 other indoor activity centers, videotaped observations of children's use of a drawing pad program indicated that the computer center can provide another rich environment for preschool programs, and may be especially valuable for some children. The preschool computer activity center may function best as a social center, a place for choice, for curiosity, for trying things out, and for fostering a problem solving attitude.

ED287710

Young Children and Turtle Graphics Programming: Generating and Debugging Simple Turtle Programs.

Cuneo, Diane O.

1986, 12p. Paper presented at the Annual Meeting of the American Educational Research Association (San Francisco, CA, April 16-20, 1986). For related documents, see ED 260 800 and ED 287 727.

EDRS Price - MF01/PC01 plus postage.

Document Type: Research Report (143); Conference Paper (150)

Major Descriptors: *Computer Graphics; *Computer Science; *Elementary School Science; *Problem Solving; *Programing

Turtle graphics is a popular vehicle for introducing children to computer programming. Children combine simple graphic commands to get a display screen cursor (called a turtle) to draw designs on the screen. The purpose of this study was to examine young children's abilities to function in a simple computer programming environment. Four- and five-year-olds were asked to solve turtle graphics problems requiring two or three commands for a solution. There were two programming-type conditions. First, children were asked to give the complete sequence of commands in advance (i.e., generate a program). Second, if the sequence did not work, they were asked to determine what went wrong and modify it accordingly (i.e., debug their program). Results of the study indicate that young children had difficulty in generating two- or three-command programs. Their ability to debug their own incorrect programs was not as high as expected. Several implications for educators are discussed. Tables and figures are provided.

ED287727
Young Children's Misconceptions of Simple Turtle Graphics Commands.
Cuneo, Diane O.
May 1986, 10p. Paper presented at the Annual Symposium of the Jean Piaget Society (Philadelphia, PA, May 1986). For related papers, see ED 260 800 and ED 287 710.
EDRS Price - MF01/PC01 plus postage.
Document Type: Research Report (143); Conference Paper (150)
Major Descriptors: *Academic Achievement; *Computer Assisted Instruction; *Computer Graphics; *Preschool Children; *Problem Solving

Four- and 5-year-olds' understanding of basic turtle graphics commands was examined before and after a hands-on, interactive problem-solving experience. Children (n=32) saw display screen events consisting of an initial turtle state, a command transformation, and the resulting turtle state. They were asked to give the command executed in each event. Most children systematically misunderstood some or all of the commands, and their misconceptions were in line with Piaget's characterization of young children's thinking. Contrary to anecdotal evidence, misconceptions were affected little by experience, feedback, and eventual success in solving turtle graphics problems.

ED295606
Microcomputers and Preschoolers.
Evans, Dina
16 Apr 1986, 8p.
EDRS Price - MF01/PC01 plus postage.
Document Type: Position Paper (120)
Major Descriptors: *Computer Assisted Instruction; *Computer Graphics; *Computer Software; *Microcomputers

Preschool children can benefit by working with microcomputers. Thinking skills are enhanced by software games that focus on logic, memory, problem solving, and pattern recognition. Counting, sequencing, and matching games develop mathematics skills, and word games focusing on basic letter symbol and word recognition develop language skills. Creativity is enhanced through music, art, and design. Two types of software used in early childhood education are computer graphics programs, such as Logo and Delta Drawings, and computer assisted instruction programs, such as Juggles, Rainbow, and Bumble Games. A program should be fun, easy, playful, and appealing. It should use story elements that children can identify with, color graphics, animation, and sound. Although formal instruction is unnecessary for such young children, adult supervision is usually required, and this may be a drawback in schools with limited funds or personnel. An important factor in the success of such a program is the organization of the instructional environment, which might include setting up a quiet area, having a set of rules regarding use, and decorating the area with instructional charts. (4 references).

ED296795
Integrating Computers into a Reading Readiness Curriculum for Pre-Schoolers through Teacher Training and Computer-Assisted Instruction.
Nemiroff, Joanne
1988, 160p. Ed.D. Practicum Report, Nova University.
EDRS Price - MF01/PC07 plus postage.
Document Type: Practicum Paper (043)
Major Descriptors: *Computer Literacy; *Computer Software; *Computer Uses in Education; *Curriculum Development; *Preschool Curriculum; *Reading Readiness

An elementary school guidance counselor serving as a volunteer computer education consultant to a preschool implemented a practicum to introduce computers into a community center's preschool program. Goals were to: (1) provide teachers with the knowledge and understanding needed to operate a computer; (2) acquaint teachers with computer software that corresponded to the hierarchy of reading skills taught in the preschool; (3) instruct teachers in methods for integrating computers into the regular curriculum by writing and use of a computer curriculum guide; (4) provide assistance to teachers by working directly with their students as they used the computer and software. The computer curriculum guide relates particular reading readiness skills to specific computer software and follow-up activities and enables teachers to supplement their regular classroom instruction with computer activities. Practicum evaluation data indicated that outcomes were positive. Numerous related materials, including the 70-page computer-assisted reading readiness curriculum guide, are appended. The guide consists of four clusters of activities focusing on computer literacy, visual skills related to reading readiness, concept formation, and reading skills. Follow-up materials in the form of handouts provide activities supporting the lessons.

ED290547

Microcomputers and Preschoolers: Bandwagon or Boon.

Shade, Daniel D.

Nov 1987, 21p. Paper presented at the Annual Meeting of the National Association for the Education of Young Children (Chicago, IL, November 12-15, 1987).

EDRS Price - MF01/PC01 plus postage.

Document Type: Research Report (143); Conference Paper (150)

Major Descriptors: *Cognitive Ability; *Computer Simulation; *Computer Uses in Education; *Learning Processes; *Microcomputers; *Preschool Children

Research indicates that there are numerous opportunities for educators to use computer technology in ways which are developmentally appropriate and which support or enhance preschool children's natural motivation to explore and discover. Since many of the misconceptions about preoperational cognition that form the basis for serious objections to preschool computer use have been dealt serious blows in recent years, the microcomputer should not be viewed as different from any of the other materials commonly used in early childhood classrooms. When the computer is used appropriately, it has the potential to involve children more than television does; it is less static than picture books, and as open-ended as crayons. In particular, discovery-oriented child-computer environments, "microworlds," or simulations have numerous potential uses, such as modeling concepts, exposing processes which are not available in all their facets to the perception of young children, providing intrinsic motivation, connecting different ways of learning, and serving a "scaffolding" function. Finally, the computer is worthy of inclusion in the early childhood classroom simply as a part of the everyday world which is to be explored, manipulated, and understood. To argue that the young child should be protected from exposure to computers is tantamount to keeping an electric toothbrush under lock and key. A 55-item reference list concludes the document.

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ERIC DIGEST

December 1989 EDO-IR-89-10

The Impact of Microcomputer-Based Instruction on Teaching and Learning: A Review of Recent Research

by M. D. Roblyer

This digest is based on *Assessing the Impact of Computer-based Instruction: A Review of Recent Research*, by M. D. Roblyer, W. H. Castine, and F. J. King.

Introduction: A Rationale for Research on Computer Effects

The term *microcomputer revolution*, frequently used to describe the widespread use of microcomputers in schools since 1980, seems to imply that recent computer use has dramatically improved classroom methods and instructional effectiveness. However, society has some very specific measures for the effectiveness of its educational system: student achievement, attitudes, dropout rate, learning time. After nearly 25 years of computer use in education, including nearly a decade with microcomputers, the impact of this technology on these measures remains largely unknown.

As educational decision-makers face the fiscal challenges of maintaining and expanding the instructional computing movement, they need current information about the past and potential impact of computer applications to help them invest their resources wisely. In an effort to provide this information, a review of instructional computing research was done which analyzed studies between 1980 and 1987 and which used statistical summary procedures to enable the reviewers to focus on impact in specific areas and with specific kinds of students.

Review Procedures

The review described here used a meta-analysis procedure, a method for statistically summarizing data from research reviews which has come into fairly common use in recent years and which has been used in many reviews of instructional computing research (Kulik, Kulik, & Cohen, 1980; Bangert-Drowns, Kulik, & Kulik, 1985; Kulik, Kulik, & Bangert-Drowns, 1985). Meta-analysis calls for calculating a measure of impact (an "effect size") for each study included in the review. This measure is then summarized across studies, and the relationship of effects with various factors (e.g., impact at various grade levels and content areas) is calculated. Methods used in the current review, however, used recently-developed means of calculating and comparing effect sizes which made meta-analysis results more meaningful than those of past reviews of instructional computing research.

Studies were located through traditional means: online searches of *ERIC* and *Dissertation Abstracts*, manual searches of more recent journal issues, bibliographies from past reviews, and contacts with experts in the field for unpublished reports. Of the over 200 complete studies located, 38 published and unpublished studies and 44 dissertations met the criteria necessary to include them in the meta-analysis. Effect sizes were calculated for each study, and these effects were summarized across studies and compared in a number areas.

Trends in Study Results

An overall finding was that computer applications had a statistically significant positive effect ($p<.05$) in a majority of the areas examined. However, there was a wide variation in the focuses, procedures, materials, and findings among the studies included in the meta-analysis, as well as a paucity of acceptable studies in many categories. Therefore, the results given here must be interpreted cautiously until more studies of similar types and with similar reporting styles are available to confirm or deny these trends.

The following sections provide tentative answers to some questions being asked about the effectiveness of computer-based instruction.

Are computer applications more effective at certain grade levels? Significant effects were found at all levels. This review found larger effects at college and adult levels than at elementary and secondary levels.

Are computer applications more effective with certain types of content? Computer applications seemed to have slightly greater effects with mathematics than with reading/language skills, but this difference was not statistically significant. Using computers to teach cognitive skills (problem solving and critical thinking) had an overall effect about equal to that for mathematics and for reading/language. One of the highest effects observed in the entire review was that for science, but the number of acceptable studies was especially small.

Are computer applications more effective with certain kinds of students? This study found no statistically significant evidence of a relationship between student ability level and the effectiveness of computer-based applications. Neither was there firm evidence that effectiveness is linked to a student's gender. The issue of differential effects for these populations bears further study.

Do student attitudes improve as a result of using computers? Student attitudes toward school and subject matter was the most studied variable and seemed the most affected by computer use. Improving students' self-image and self-esteem, while much talked about in the literature, was not much studied, but the trend in the data was positive. Only a few studies were located which compared attitudes toward computer instructional methods with non-computer ones, and the data seemed to indicate that there was no difference in student attitudes.

What is the comparative effectiveness of various application types (drill, tutorial, and other)? Only applications in mathematics and reading/language skills were analyzed, since these were the only content areas with enough studies to support comparison. While effects seemed slightly higher for tutorials in reading, statistical results allow no firm conclusions about the superiority of any type of application. Trends in the data do indicate the need for further study of whether or not drill applications are better for lower-level skills (e.g., word analysis) and tutorials for higher-level skills (e.g., comprehension).

How effective are computer applications in teaching English and reading to ESL students? Effectiveness was low overall and was even found to be negative in studies involving Hispanic students. Because there were very few studies in this area, however, results must be viewed with caution.

How effective is word processing in improving writing skills? Word processing seems to have a positive effect on student attitudes toward writing. No firm conclusions can be drawn, however, about the effect of word processing on writing quality, length of composition, and number and kind of revisions.

How effective are Logo and CAI applications to teach problem-solving skills? The effects of Logo applications on problem-solving and general thinking skills were found to be significant. Effects achieved with so-called problem-solving CAI were not different from zero. On the basis of these findings, Logo shows promise as a method of enhancing cognitive skills of various kinds, and it looks especially good in comparison with unstructured, discovery-learning CAI applications.

Can computer applications increase student creativity? All usable studies in this area were Logo-based and showed an overall effect higher than any other found in this review. These results, while promising, are in need of further study, preferably with larger sample sizes and control groups which use other forms of instructional treatment.

Implications of Findings for Future Use in the Field

This review indicates, not surprisingly, that computer-based instruction is potentially effective in most educational applications. However, computer-using educators should keep the following in mind when choosing applications:

- Since significant results have been found at all grade levels, current data cannot be used either to increase or decrease use of computer applications at any particular grade level.
- Computer uses in all content areas except ESL seem productive, and science may be an especially promising area. However, the type of application and the use to which it is put seem to dictate how great the impact will be.
- While using computer applications does seem to significantly improve student attitudes toward school and subject matter, administrators and teachers should not expect to justify computer purchases with these kinds of findings. To date, insufficient data exist to indicate that better attitudes have any impact on achievement or on drop-out rate.
- Most types of skill can profit from computer applications, but word processing and uses of Logo to enhance creativity and problem-solving skills are especially promising.
- Until further studies explain the negative effects found in this review, special caution should be used when contemplating computer methods to teach English language skills to Hispanic students.

Conclusion

The single greatest problem facing a systematic assessment of the impact of the microcomputer revolution on teaching and learning is the lack of sufficient numbers of studies in key areas. Findings indicate that computer applications have an important role to play in the future of education, but the exact nature of that role has only begun to be explored. Opportunities for using technology to make an impact on education have never been greater, and neither have opportunities for research. The next decade must be a time for taking full advantage of both.

References

Bangert-Drowns, R. L., Kulik, J. A., & Kulik, C. C. (1985). Effectiveness of computer-based education in secondary schools. *Journal of Computer-based Instruction*, 12, 59-68.

Kulik, J. A., Kulik, C. C., & Bangert-Drowns, R. L. (1985). Effectiveness of computer-based education in elementary schools. *Computers in Human Behavior*, 1, 59-74.

Kulik, J. A., Kulik, C. C., & Cohen, P. A. (1980). Effectiveness of computer-based teaching: A meta-analysis of findings. *Review of Educational Research*, 50(4), 525-544.

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